INTRODUCTION

The Route Clearance Company represents an improved capability for the Afghan National Army in finding and defeating Improvised Explosive Devices employed on or along routes. The route clearance company mission is to conduct route reconnaissance and clearance to detect, investigate, mark, report and neutralize explosive hazards and other obstacles along defined routes within the corps boundaries to enable assured mobility for the maneuver commander.

The route clearance company provides vital service to the civil populace by removing potential hazards.Safe passage between villages means better commerce, access to better medical and economic facilities as well as access to family throughout the provinces.

Once major conflict has subsided, route clearance companies can use many of the same skills and techniques in an area clearance role, which will benefit Afghanistan well into the future. Commanders at all levels from the Corps down to Company must understand that the route clearance company and its route clearance platoons are not stand-alone route clearance capable. They must be employed as part of a combined-arms route clearance team to be effective.

This manual will explain in detail the fundamentals of route clearance in the Afghan National Army and how to properly task organize for route clearance operations. It will further describe the roles and responsibilities of each key person in the route clearance company organization.

This manual will also describe the combined-arms approach to route clearance operations to include task organization, team roles and responsibilities, command and control, and reporting. This manual will address the fundamentals of Improvised Explosive Device defeat at the tactical level. It will include scanning techniques, actions on contact with possible Improvised Explosive Devices, identification of Improvised Explosive Device indicators, cordon procedures, and IED mitigation measures.

While the introduction of the route clearance company into the Afghan National Army is a significant step in the right direction for providing force commanders a route clearance capability, the critical importance of proper training and support for the route clearance company and platoons cannot be understated.

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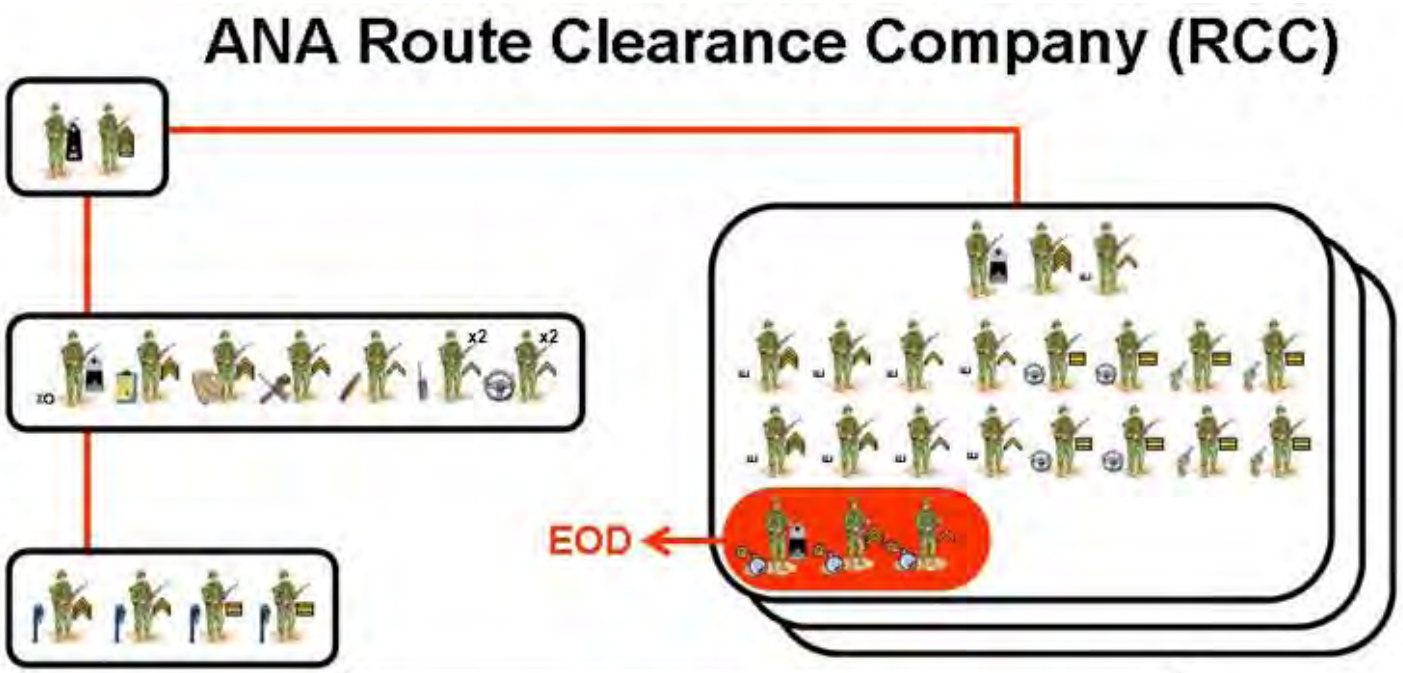
Chapter 1- Organization

1-1. Personnel.

a. The Afghan National Army route clearance company has a total of 81 personnel assigned. The company is organized into three twenty-two man route clearance platoons, an eleven man headquarters section (two officers, two NCOs and seven soldiers) and a four man maintenance section. Each route clearance platoon consists of twenty two personnel. Each platoon is organized into a seven man platoon headquarters (one Platoon Leader, one Platoon Sergeant, and five soldiers), two six man engineer squads (one Squad Leader, two Team Leaders and three soldiers) and a three man Explosive Ordinance Disposal team (one EOD Team Leader, one driver and one operators assistant). The organization chart in figure 1-1 shows the task organization of a standard ANA route clearance company.

Figure 1-1 Route Clearance Company Vehicle Organization



RCC MOS Requirements					
MOS	Officer	SNCO	NCO	SDR	**Total**
12				1	**1**
31 (Eng)	8	14	15	35	**72**
42/43 (Comm)			1	2	**3**
65 (Maint)		1	1	2	**4**
69 (Log)		1			**1**
Total	**8**	**16**	**17**	**40**	**81**

Figure 1-2 Route Clearance Company Personnel Organization

1-2. Roles of Key Personnel.

a. The Company Commander is the senior leader of the route clearance company. He advises the Brigade Commander on the employment of the route clearance company. The route clearance company commander has dual responsibilities as both a commander and special staff officer. He is the primary engineer advisor to the Brigade Commander on route clearance. He is responsible for all route clearance missions within the brigade's area of operations. He provides the purpose, direction, and motivation necessary for his company to accomplish the mission. His leadership is normally vital to the route clearance company's command and control. The company commander is ultimately responsible for:

1. Providing Route Clearance and IED Defeat expertise to the BDE Staff during the execution of Intelligence Preparation of the Battle Field and during execution of the Military Decision Making Process

2. Writing the company operations order that supports the maneuver commander's intent and concept of the operation and the brigade's engineer annex.

3. Providing mission-oriented command and control to his route clearance company.

4. Supervising the execution of his units' route clearance support within the supported unit areas.

5. Advising the supported commander and staff on the proper employment of route clearance assets and support requirements based on priority of effort.

6. Planning, preparing, executing and evaluating the training of the Company

b. The Assistant Company Commander is second in command of the route clearance company and must be ready to assume command. He is primarily responsible for tracking current operations in the Company tactical operations center with the assistance of his Operations Sergeant. He coordinates route clearance missions with the Corp staff and ensures route clearance assets are properly task organized for success. His responsibilities include-

1. Receiving and consolidating unit and mission reports from the platoons and submitting them to the corps tactical operations center and the company commander, as required.

2. Ensuring that pre combat inspections are complete throughout the company.

3. Planning and coordinating all logistical support with the support battalion and other agencies outside the company.

4. Preparing or assisting in the preparation of the company operations order, specifically focusing on paragraph 4.

5. Coordinating with higher, adjacent, and supporting units. This function is vital when the company receives support from other units (equipment, maintenance, or medical assets) or other engineers.

c. The First Sergeant is the senior enlisted soldier in the company. He advises the Company Commander on all enlisted matters. He also assists the Assistant Company Commander on logistical requirements for the company. The First Sergeant is the senior enlisted trainer and is responsible for ensuring individual training is completed to standard. His responsibilities include:

1. Being involved early in the planning process to provide quality control in the execution of engineer missions and the logistics operations to support them.

2. Checking on the welfare of the soldier, as a second set of eyes for the commander.

3. Enforcing the tactical standing operating procedures.

4. Planning and coordinating individual training.

5. Coordinating and reporting personnel and administrative actions.

6. Supervising supply, maintenance, communications, field hygiene, and medical evacuation or nonstandard casualty evacuation operations.

7. Ensuring that combat service support priorities are requisitioned and replenished.

8. Monitoring logistics status and submitting reports to the company executive officer and the brigade command post, as required.

9. Supervising, inspecting, and observing matters the commander designates. He may observe and report on the status of obstacles and mobility within the company's area of operation.

10. Assisting and coordinating with the Assistant Company Commander.

d. The Platoon Leader is the senior leader of the route clearance platoon. He is responsible for planning, preparing, rehearsing and execution of route clearance missions. He reports platoon activity to the Commander and/or the Assistant Company Commander and to the supported unit commander.

e. The Platoon Sergeant is the senior enlisted member of the platoon. He is second in command and must be prepared to assume command of the platoon in the absence of the Platoon Leader. He is responsible for coordinating all logistical support to the platoon. He is the senior enlisted trainer and responsible for training individual tasks and platoon collective tasks.

f. The Squad Leader is responsible to lead his squad as part of the platoon. He is responsible for the individual training of all squad members. He reports to the Platoon Leader for missions and to the Platoon Sergeant for training and logistical matters.

g. The Explosive Ordinance Disposal team chief is the senior EOD expert in the platoon. He is responsible to train the EOD team in IED mitigation techniques. He should have graduated and received a certificate of training from the EOD and IED Operator courses.

h. The Explosive Ordinance Disposal Operator assists the EOD team chief in IED mitigation. There are two positions within the EOD team, one driver and one assistant operator. He should be a graduate and received a certificate of training from the EOD Operators course. He should also have graduated and received a certificate of training from the IED mitigation course.

i. The Maintenance Section Sergeant heads the four man maintenance and recovery section which provides support to the route clearance company. The team consists of a Maintenance Section Sergeant, a Maintenance Team Leader, and two wheeled mechanics. Both mechanics should be qualified to drive and operate the company wrecker.

j. The Operations Sergeant is the senior enlisted soldier in the tactical operations center. The Operations Sergeant and the Assistant Company Commander are responsible for operating the company tactical operations center. His section consists of a Supply Sergeant, an Armorer, two Radio Telephone Operators, a Signal Systems Operator and two vehicle drivers.

1-3. Equipment.

a. The route clearance company is equipped with 17 M1151 Up-armored HMMWVs, two Ford Ranger light tactical vehicles and an International wrecker. Platoons are outfitted with either MIL D-1 (AN/PSS-12) or Valon mine detectors and specialized EOD equipment that enables them to detect, and neutralize explosive hazards along routes. Each vehicle in the platoon is equipped with a Symphony electronic warfare countermeasure device to jam radio controlled IEDs, FM radio communication equipment and either a .50 caliber M-2 or M240B 7.62MM machinegun on a top-mounted gun turret. The EOD vehicle may or may not have a machine gun (not assigned a crew served weapon in the Tashkil).

Figure 1-2 M1151 HMMWV with Symphony Jamming System

b. Two vehicles in each platoon are equipped with a mine-roller, and the headquarters is allocated one. The mine-roller is designed to help detect and defeat pressure activated IEDs and provide the crew limited standoff. *CAUTION: Once the enemy determines the standoff distance they can easily space the trigger and main explosive charge for a direct hit on the vehicle. Effort must be made to vary routines and TTPs to avoid enemy counter tactics.*

Figure 1-3 Panama City Mine Roller Mounted on an M1151 HMMWV

Figure 1-4 SPARK OIF Track Width Roller Mounted on an M1151 HMMWV

c. The route clearance company may have the AN/PSS 12, the Valon VMHS3, the MIL D1 or the VMR2 Valon Minehound. It is important to note that metal/mine detectors enhance the route clearance company's ability to detect metal objects. Due to the enemy's use of very low metal or no metal content devices, visual indicators are the primary means of detecting IEDs.

1-4. Capabilities and Limitations.

a. Route clearance companies represent an ANA capability to defeat the current explosive hazard threat in Afghanistan.

b. With current equipment and manning, a single RCC can support one to three route clearance operations. However, maintenance and recovery assets can only service one platoon at a time. Each Route Clearance Platoon is capable of scanning 15-20 kilometers of road mounted or clearing 1-3 kilometers of road dismounted per day.

NOTE: It is important for commanders and staff to realize that a route clearance company has a limited capability to conduct mounted route clearance. They are not equipped with ground penetrating radar, mounted metal detection devices or an armored vehicle with an interrogation arm. They rely solely on visual means and intelligence reports to identify possible IED locations.

c. Each route clearance platoon is assigned one EOD team consisting of and IED operator and two EOD operators. The explosive ordinance disposal team represents the only neutralization capability in the platoon and enables the platoon to conduct neutralization and render safe operations. This explosive ordinance team must be considered a critical pacing item in the company organization. Each explosive ordinance disposal team is equipped with a vehicle, two MMP 30 robots, two bomb suits and an explosive ordinance disposal kit. The skill level of the team determines the level of neutralization capability the platoon possesses.

d. As previously mentioned, the Tashkil for the route clearance company currently lists no specialized route clearance equipment that enables mounted detection of explosive hazards. Therefore, route a clearance company can only perform dismounted route clearance operations with a high degree of success. Like any other mounted unit the route clearance company or platoon can scan for and react to explosive hazard indicators. The mounted scan must be done at reduced speeds to allow a reasonable chance of visual detection. Additionally, the company maintenance and recovery team has one wrecker and can only support one platoon at a time.

e. Route clearance companies and platoons are not stand-alone route clearance capable. They rely heavily on a task organization that includes infantry, military police, medical, recovery and fire support assets. The Commander may combine two route clearance platoons to form a larger and more effective route clearance package. The mission of route clearance should be assigned to a maneuver commander based on the commander‘s priorities. Commanders and staff must clearly define priorities of effort in their area of operations and focus route clearance assets to those areas most critical to mission accomplishment. Once given the mission of route clearance in a specific area, route clearance assets are assigned to maneuver units for the duration of that mission.

Chapter 2- Mission

2-1. Mission.

On order, route clearance companies conduct route reconnaissance and clearance to detect, investigate, mark, report, and neutralize explosive hazards and other obstacles along defined routes within Corps boundaries to enable assured mobility for the maneuver commander.

2-2. Mission Essential Task List.

a. The mission essential task list is based on the unit's wartime mission; the unit must train as it plans to fight. Commanders develop this list because units cannot obtain proficiency on every possible task. This list allows the commander to narrow the training requirements to an achievable number. The route clearance company has six critical mission essential tasks.

1. Conduct route reconnaissance and clearance.
2. Perform engineer reconnaissance.
3. Conduct minesweeping operations.
4. Conduct deliberate route reconnaissance.
5. Clear obstacles, to include IEDs, using demolitions.
6. Clear obstacles with engineer countermine equipment.

b. Route reconnaissance and clearance is a key task to the mission of providing mobility support to the commander.

c. Clearing obstacles using demolitions or engineer counter-mine equipment support route clearance operations (IED mitigation).

d. Conducting minesweeping operations should be focused on a route or in a designated area. The route clearance company will focus on clearing routes. Area clearance operations should be conducted by combat engineer companies.

e. Conducting route reconnaissance is essential in providing intelligence about a specific route or infrastructure. The data captured on these missions can assist many operations. Local commanders use the data for immediate tactical decisions and the local or national governments use the data to assess growth and stabilization needs of the province or entire country.

f. Reporting critical route information is crucial. All critical information must be reported to the company TOC, the brigade TOC and passed to the corps in a timely manner. These reports include, but are not limited to 10 line IED/UXO reports, SPOT reports and hasty route reconnaissance reports. Route clearance companies are not specifically trained on deliberate or engineer reconnaissance, but can provide useful information on any route they clear.

2-3. Task Organization.

a. The key to success in operations is a well organized unit that is tailor made for a specific task or mission. A task organization places the proper manpower, organizations and equipment into a mission specific package. Task organizations for route clearance should be formed around habitual relationships as much as possible to take advantage of group learning and familiarization with tactical standing operating procedures.

a. All assets necessary to conduct a route clearance operation reside within each ANA brigade. The Brigade Commander assigns a maneuver battalion with a task to secure or clear an area or route within his battle space. Ideally, the Battalion Commander and staff will analyze the mission and determine the forces and resources needed to accomplish the task. Once mission analysis is complete the Battalion Commander can request the needed assets from the Brigade Commander. If the battalion requires additional assets from the brigade to conduct the mission, they are provided by the brigade based on availability and priority. Figure 2-1 below shows an example task organization for a route clearance package and describes the possible missions or tasks for each part of the organization.

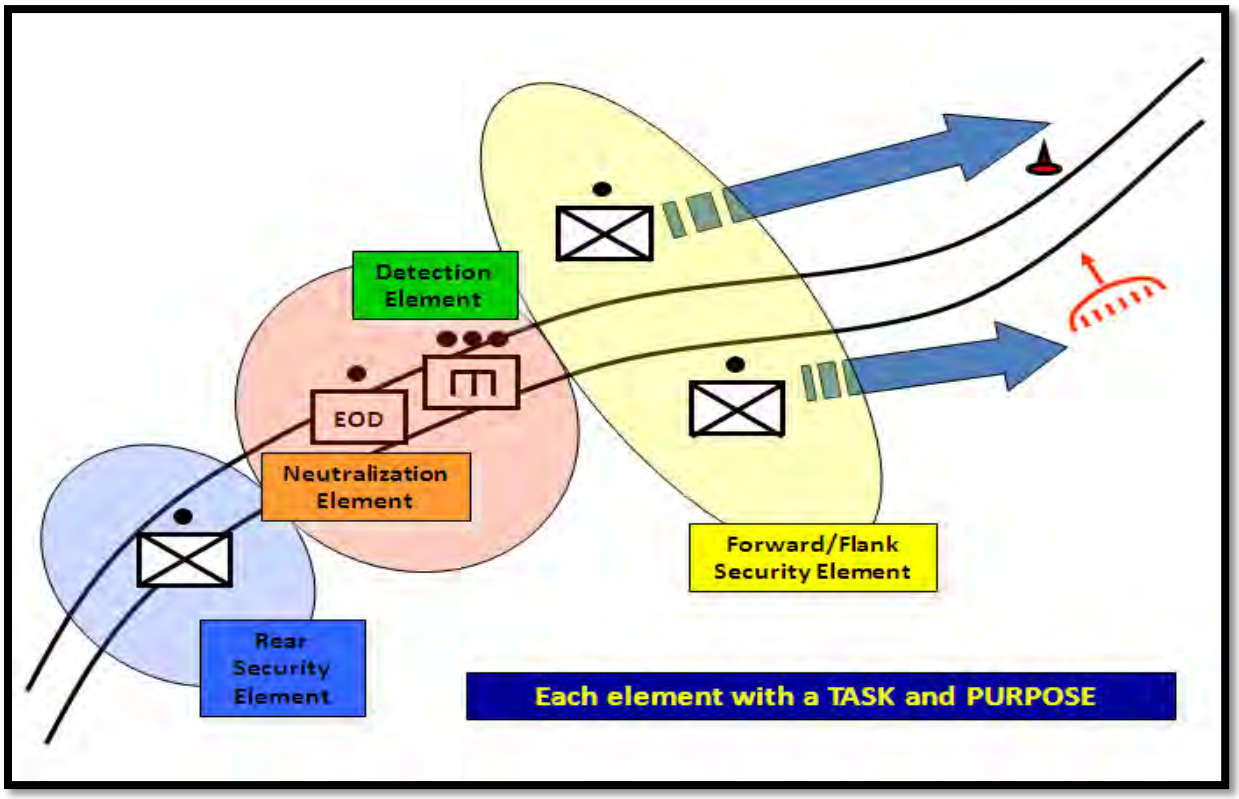


Figure 2-1 Route Clearance Contingency Operations

2-4. Methods of Clearance.

a. There are three methods of route clearance – Contiguous, Combat and Combined.

1. Contiguous clearance is a deliberate clearance of a route from a start point to an end point. The Route Clearance Patrol proceeds along the designated route at a deliberate pace, scanning, detecting, and clearing any explosive hazards or obstacles. Although effective, it is not the most secure method in a high-threat environment. It is also time-intensive and constrains the maneuver commander's operation

due to the pace of a deliberate clearance. The contiguous clearance method is the primary method for initially clearing a route that has not been recently cleared. The commander accepts risk based on the pace of the movement of the route clearance patrol along the route.

2. Combat clearance focuses on specific named areas of interest. It is reliant on intelligence to that identify key clearance objectives for the route clearance patrol. These would focus on the likely points of IED emplacement along the route. The route clearance patrol will move at a hasty (15-20 kilometers per hour) pace between named areas of interest. Upon encountering the named area of interest or any danger or suspect area, the sweep elements will then dismount and deliberately clear. When the named areas of interest are cleared, the route is considered clear. The combat method targets key IED hot spot locations which allow the most efficient use of route clearance assets. The commander assumes risk along the hastily cleared sections of the route, and must ensure that the route clearance patrols do not set identifiable patterns during clearance operations.

3. The combined method is a combined arms operation where key points along the route are secured and cleared ahead of a deliberate route clearance patrol. Once the key named areas of interest are cleared, the Route clearance patrol clears the entire route at either a hasty or deliberate pace. The named areas of interest require over watch during this operation – a manpower intensive activity. The commander again assumes risk based on the route clearance patrol‘s rate of movement.

b. Each method can be conducted in either a deliberate or hasty manner. The method is dependent on the commander‘s objectives and the elements of mission, enemy, troops available, terrain, time available, and civil considerations. Below is a chart that shows the different variations of clearance methods with some advantages and disadvantages associated with each.

Tactic	Description	Advantages	Disadvantages
Contiguous (Hasty)	"Drive-By" clearance using all available sensors – move through route at 15-20 kilometers per hour or less.	• Rapidly clears large areas with little force commitment (clears 20 kilometers per hour, 100 kilometers per day) • Confirms/Denies reconnaissance	• Low percentage of success • Easy pattern development and avoidance by the enemy
Contiguous (Deliberate)	Dismount soldiers in an inverted "V" / OP Barma formation – working with supporting vehicles to identify ambush sites and IED's	• High success rate • Gathers other route related intelligence leading to follow-on operations	• Very slow method of clearing a route (clears 3 kilometers per hour – 15 kilometers per day maximum) • Very High Troop Vulnerability
Combat (Hasty)	Clear Key named areas of interest to ensure passage of friendly forces. Once named areas of interest are clear, route is considered clear	• Intelligence driven, targeted operation leads to moderate success. • Maximizes troop economy, allowing a completed clearance of an area as large as the intelligence picture supports	• Intelligence driven, targeted operation depends upon good intelligence • Easily countered once the enemy understands the pattern.
Combat	Occupy Key	• Intelligence	• May demand a

(Deliberate)	named areas of interest and ensure clearance to consider route clear.	preparation of the battlefield driven operation with moderate success rate. • Can lead to interdiction operations verses deterrence.	large troop commitment for a long route. • High risk operation, may either lead to destruction of IED cell or catastrophic "miss"
Combined (Hasty)	Uses more than one element to clear key named areas of interest while another does a "Drive-By" contiguous hasty clearance	• Leads to great deterrence of obstacle/IED emplacement • Uses both force economy and intelligence preparation of the battlefield and targeting to maximum effectiveness.	• Requires slightly more troops (2 platoons minimum) • May still project a pattern for the enemy to avoid
Combined (Deliberate)	Use multiple elements to occupy key named areas of interest while others do a dismounted deliberate clearance.	• Outstanding rate of success. • Demonstrates friendly presence, and will both deter and interdict.	• Requires a large troop commitment • Troop vulnerability mitigated, but still moderate risk.

Figure 2-2 Methods of Clearance

2-5. Route Clearance Tactics, Techniques and Procedures.

a. With limited mechanical means at their disposal, route clearance companies and platoons conduct route clearance using basic counter IED techniques typical to any other combat patrol. The route clearance platoon is the detection and neutralization element of a route clearance patrol. The route clearance platoon moves mounted along a specified route, detecting explosive devices by visual means, assisted by optics. Upon encountering danger areas like culverts, choke points, bridges, prior blast holes, steep up or down slopes, sharp curves, and prior ambush sites, the route clearance platoon uses dismounted elements to deliberately clear the areas while covered by a security element. Route clearance company dismounts play the critical detection role in ANA route clearance operations. The tasks include:

1. Locating command wires and tracing them back to triggermen locations.

2. Spotting poorly-camouflaged and sited IEDs.

3. Spotting hoax and secondary devices.

4. Using mine detectors to conduct deliberate sweeps at targeted named areas of interest.

5. Using mine detectors to search for caches near IED sites.

b. The critical reduction element is the EOD team within each route clearance platoon. This asset represents the only organic neutralization element within the route clearance company.

c. ANA route clearance elements may operate with or without coalition support, depending on the mission and training and experience level of the unit. The route clearance patrols tactics, techniques and procedures in this chapter are only examples. It is critical that a unit does not use the same tactics twice in a row. Distances, vehicle spacing and tactics, techniques and procedures need to be constantly changed so the enemy cannot precisely plan where to place IEDs, booby traps, sniper positions or ambushes. Route clearance should be an offensive operation. Instead of reacting to the enemy, the route clearance element must keep the enemy on the defense, and force the enemy to react to ever changing tactics, techniques and procedures.

d. While conducting deliberate route clearance operations on unimproved roads (dirt or gravel), vehicle spacing is adjusted by the platoon commander based on the enemy threat and type of terrain. The vehicle spacing should be varied from truck to truck, and changed constantly. Equal spacing, i.e. 50 meters between all vehicles, helps the enemy to estimate where to place secondary IEDs. Irregular spacing makes it more difficult for the enemy to plan his attack.

e. Mine detector teams are placed in front of the lead mine roller a sufficient distance (50 meters or more) so that if the mine roller strikes a mine or IED, the mine detector operators are not injured by the blast and/or fragmentation. A minimum of two mine detector operators should sweep the road visually and with mine detectors to detect IED indicators (disturbed earth, wire, etc.). A minimum of two (one on each side of the road) sweep the shoulders and the immediate are to the sides of the road. The mine detectors will detect the metal content of most mines, wires, battery packs or metal within most pressure plates. The enemy will use low or no metal content devices in some areas to defeat mine detectors. For this reason, visual scanning with the aid of binoculars is very important.

f. While operating in known danger areas, the level of visual scanning and mine sweeping must be increased to avoid trip wires, pressure plates or other trigger devices. Dismounted teams must spread out

and locate command wires, command pull wires, triggermen, ambush sites and snipers. The "V" shaped formation is a common method used for deliberate clearance. When possible, additional vehicles and dismounts are used to increase security and provide greater firepower. The Dismounts must be equipped with binoculars to aid them in visually locating threats, and hand held radios so they can immediately inform the platoon commander and other leaders of threats. Without the aid of binoculars and radios, dismounted soldiers are relatively ineffective.

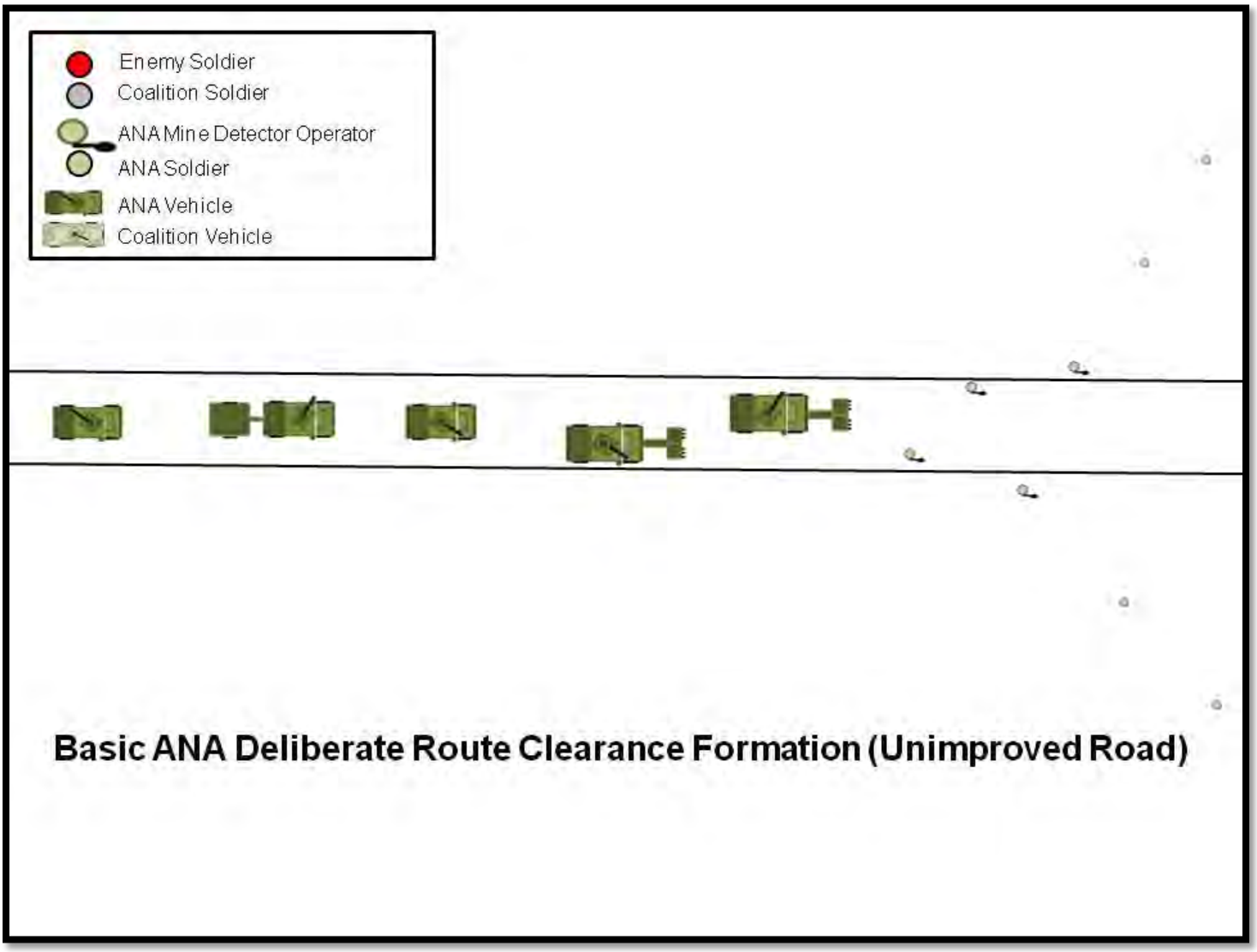


Figure 2-3 Basic Deliberate Route Clearance Formation (Unimproved Road)

g. While conducting deliberate route clearance operations on improved roads (paved), vehicle spacing considerations are the same as with unimproved roads. Mine detector operators are normally not used on the surface of paved roads. Mine detector operators should be used on the shoulders of the road, and the additional mine detector operators are on standby to provide relief to the primary team, and can be used to assist in investigating danger areas.

Figure 2-4 Basic Deliberate Route Clearance Formation (Paved Road)

h. While conducting deliberate or hasty route clearance operations on unimproved or improved roads with coalition forces, vehicle spacing considerations are the same as previously discussed. ANA vehicles are dispersed throughout the formation to provide support to the route clearance operation. This type of formation is normally used in the early stages of partnership with coalition forces to familiarize the ANA route clearance platoons with their area of operations. When the brigade, battalion and company commander feel that the ANA route clearance platoon is trained and ready to conduct independent operations, this formation is no longer used. It is important that the ANA route clearance platoons do no become dependent on the coalition's technologically advanced equipment. It must be stressed that danger areas must be cleared by dismounted soldiers with optics and mine detectors. During the early stages of operations, one coalition soldier should accompany each ANA soldier during dismounted operation. Multiple rehearsals and partnership training are vital, as verbal communications may be difficult or impossible due to the language barrier. If the coalition soldiers and the ANA soldiers do not fully understand each other's tactics, techniques and procedures, there will be confusion during the mission which will endanger lives.

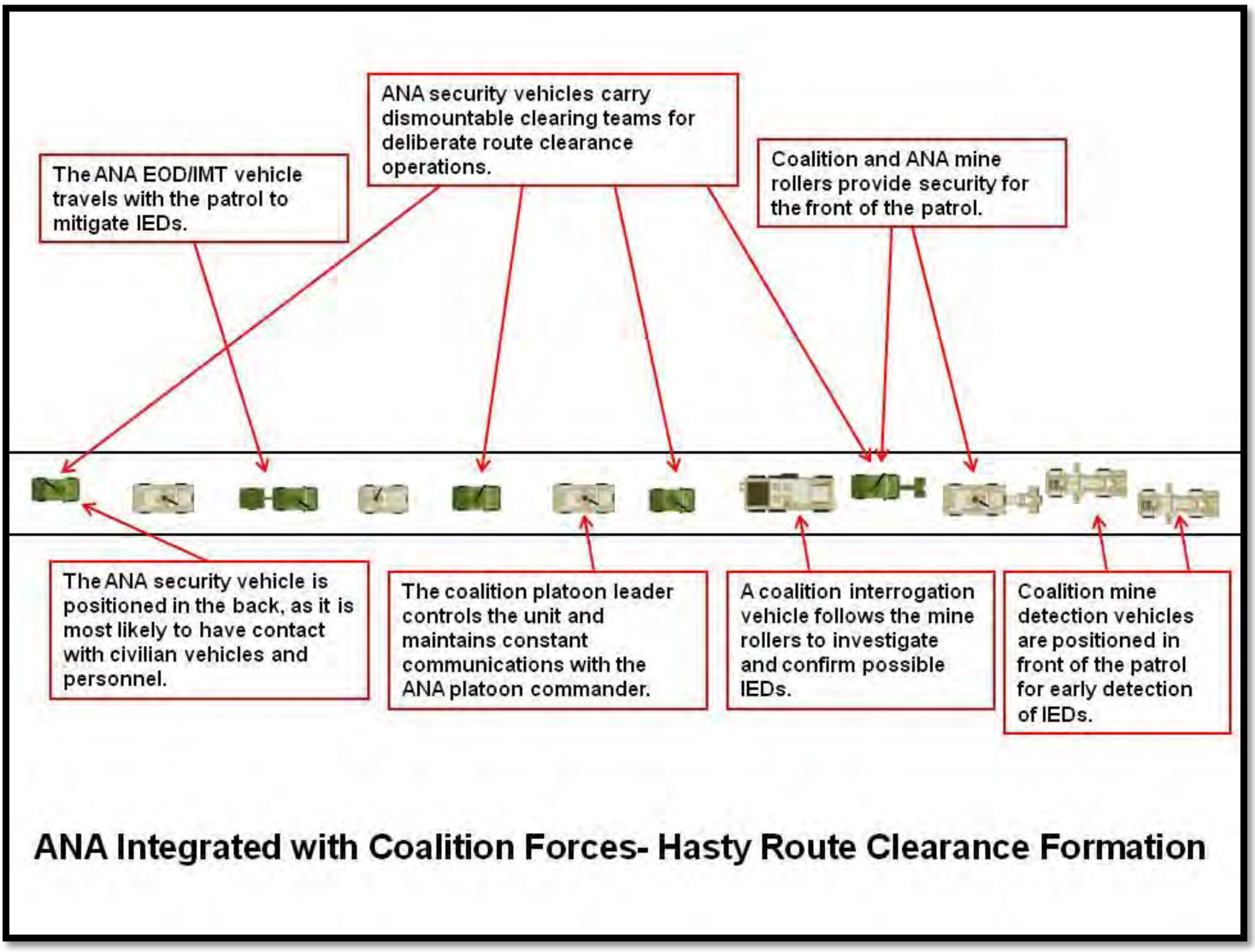


Figure 2-5 Integrated Route Clearance Formation (Hasty Clearance)

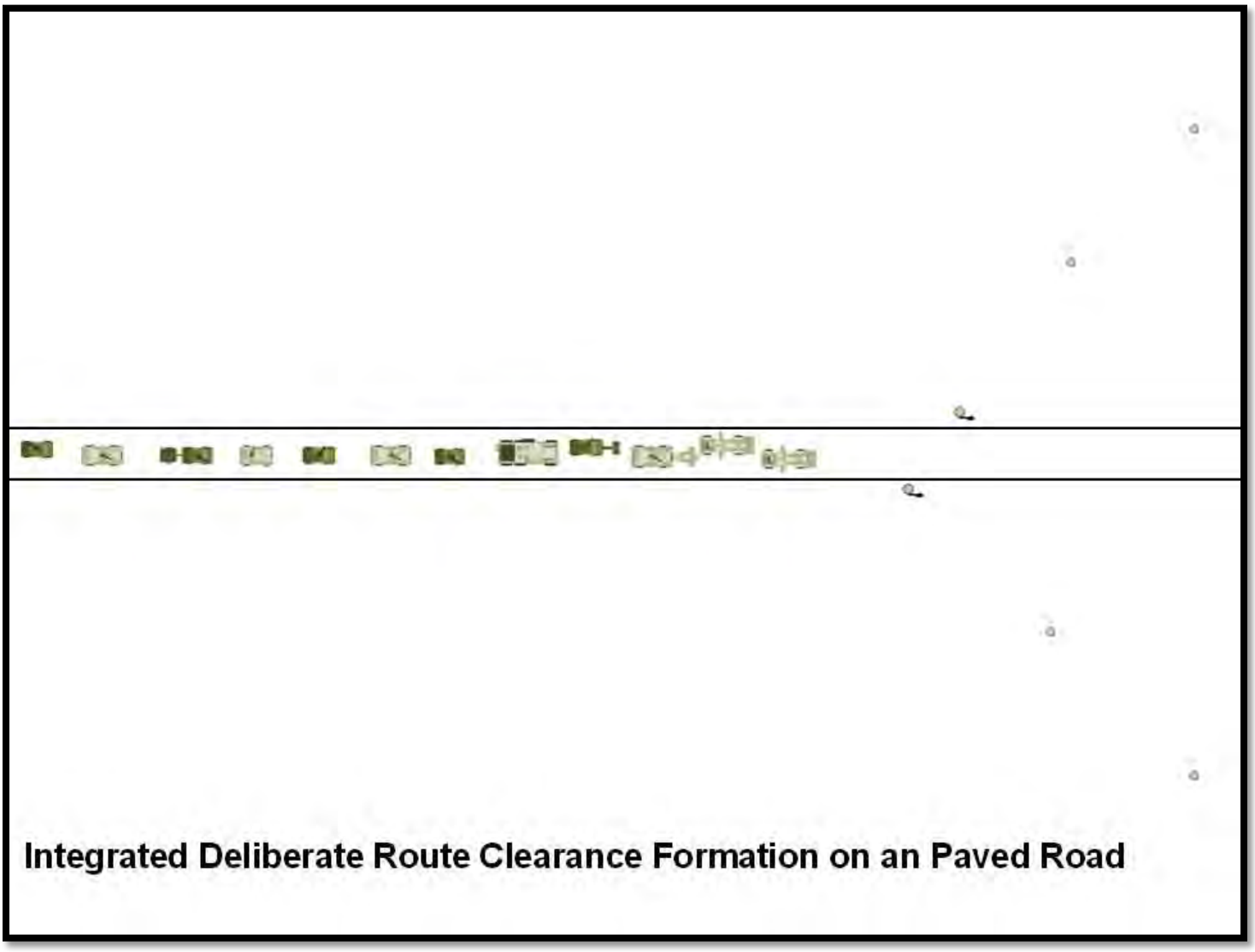


Figure 2-6 Integrated Route Clearance Formation (Deliberate Clearance, Paved Road)

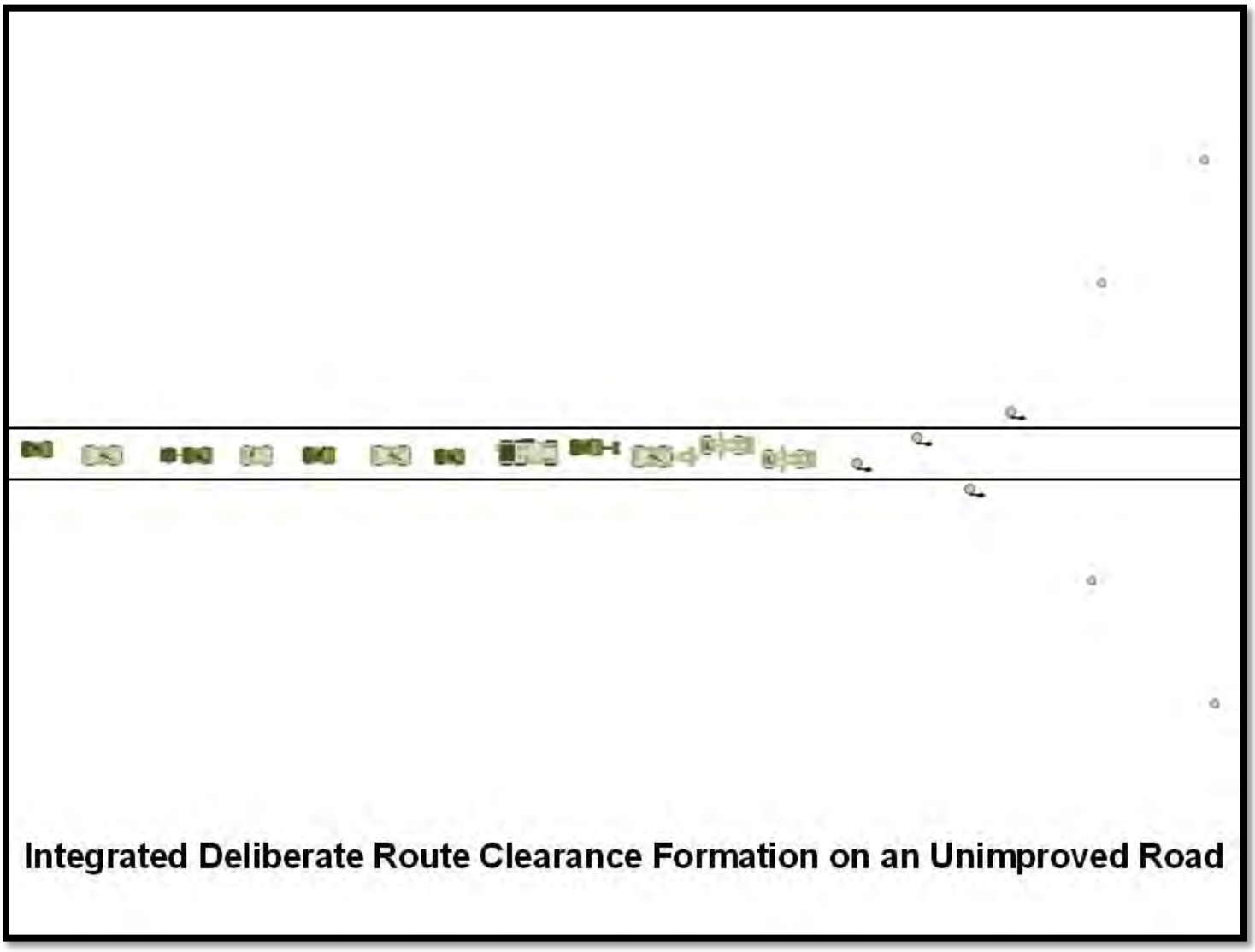


Figure 2-7 Integrated Route Clearance Formation (Deliberate Clearance, Unimproved Road)

i. Route clearance platoons are trained to operate with equipment and personnel organic to the platoon. In most cases, the five vehicles and twenty-two personnel assigned to a route clearance platoon are not sufficient to provide the firepower or dismounted capability to clear most routes. It is recommended that the commander task organize his company into route clearance packages based on the mission. A route clearance package may consist of up to two platoon's worth of equipment and personnel. One platoon commander should be assigned as the officer in charge. His assigned platoon sergeant should be the noncommissioned officer in charge. Additional vehicles, personnel and equipment are used from within the company to form a route clearance package. This gives the route clearance platoon commander the ability to form dismounted teams to assist in flushing out, killing or capturing enemy snipers, triggermen or ambush teams. It also increased the amount of crew served weapons available to support mounted and dismounted operations.

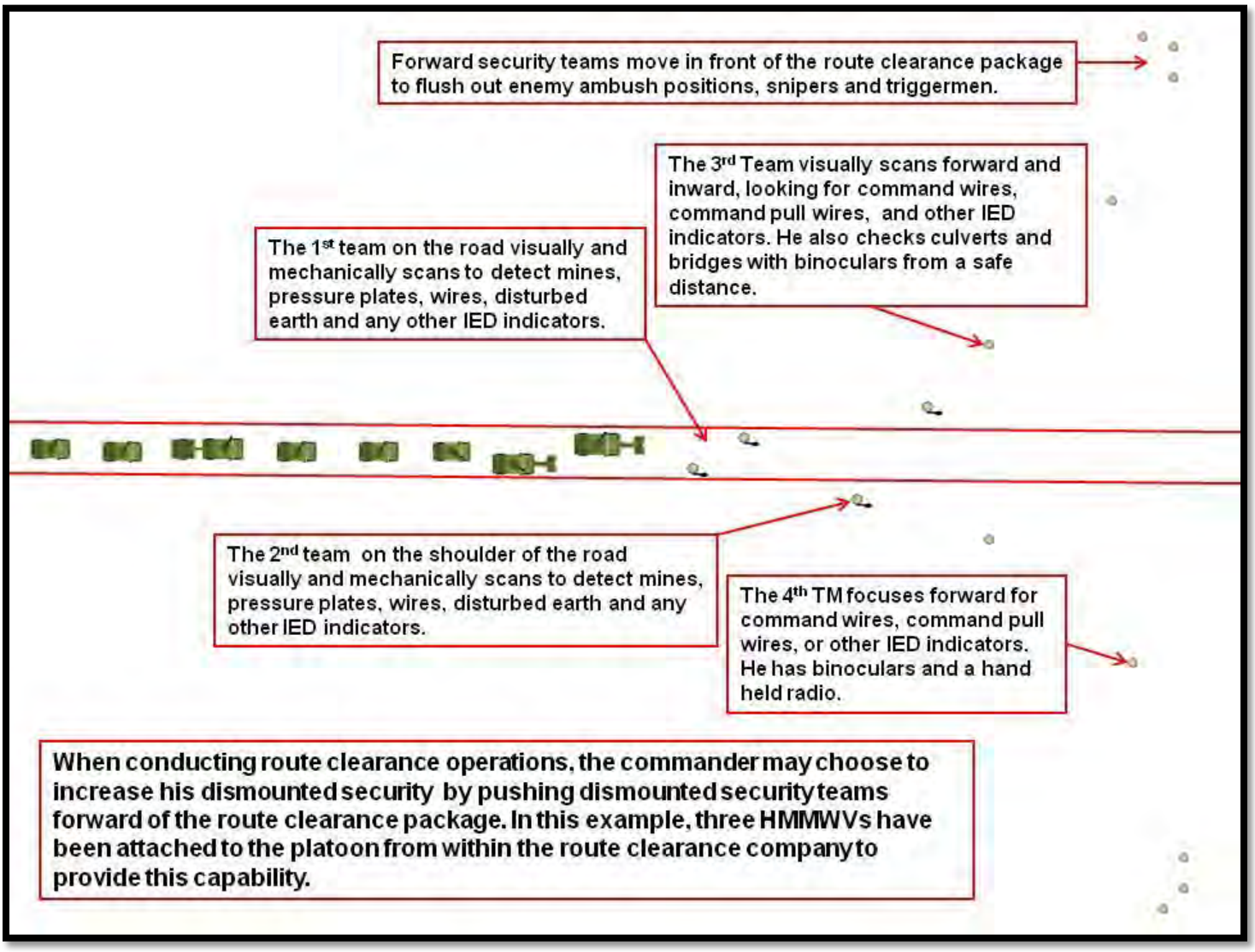


Figure 2-8 ANA Route Clearance Formation (Deliberate Clearance, Unimproved Road)

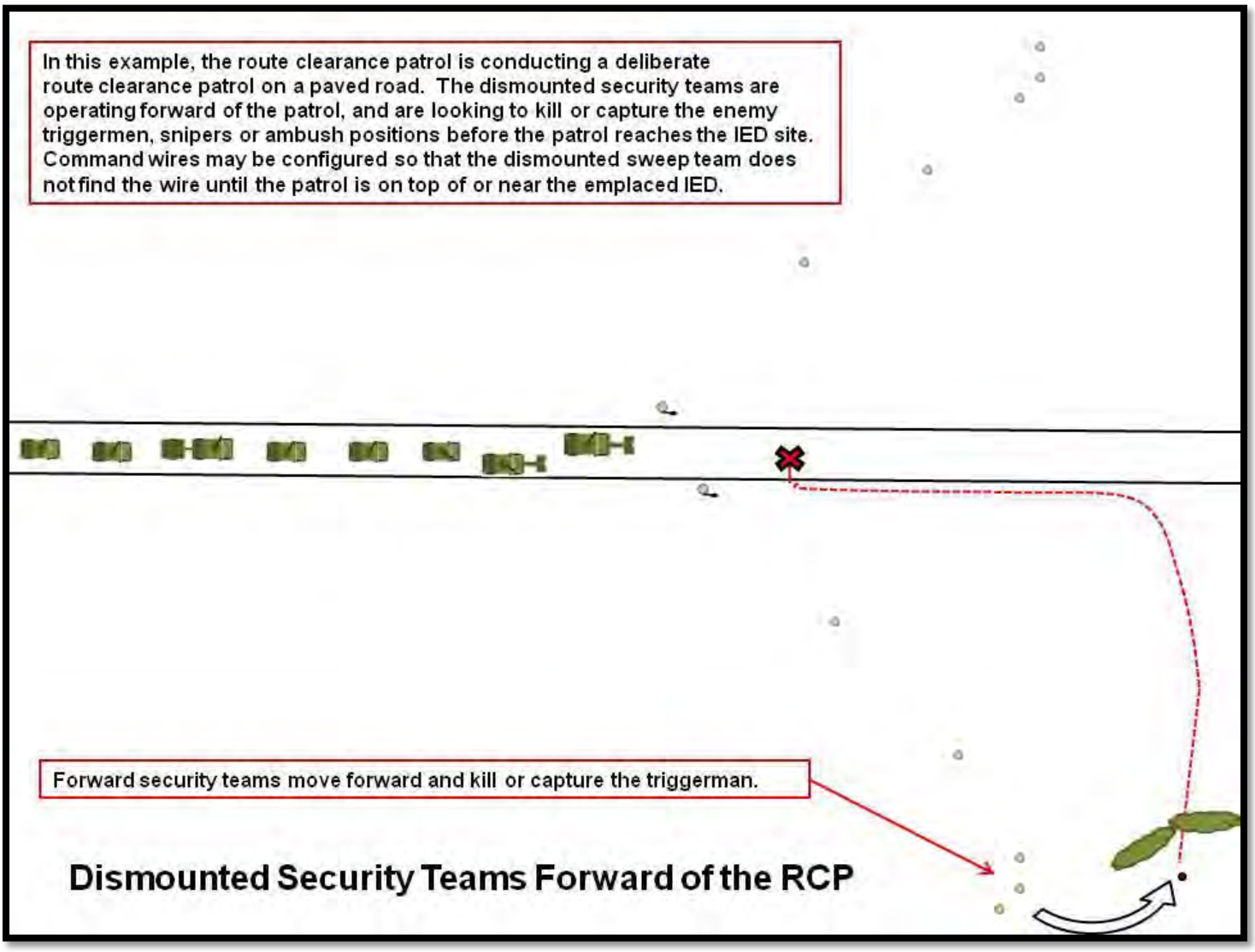


Figure 2-9 Dismounted Security Teams Operating Forward of the Route Clearance Platoon

j. Clearing culverts and bridges is one of the route clearance platoon's primary tasks. There are many ways to accomplish this task. The enemy targets dismounts that are clearing culverts and bridges with ambushes, sniper fire, trip wires and mines. Constantly changing your tactics, techniques and procedures while clearing these areas is vital. Scan and check the area very closely for enemy threats. If the terrain permits, using vehicles to maneuver and dismount soldiers is one method of clearing a culvert or bridge. This allows a vehicle with a crew served weapon to overwatch and support the dismounts while they are visually clearing the culvert or bridge. This same method can be used to move dismounts near a known or suspected enemy position.

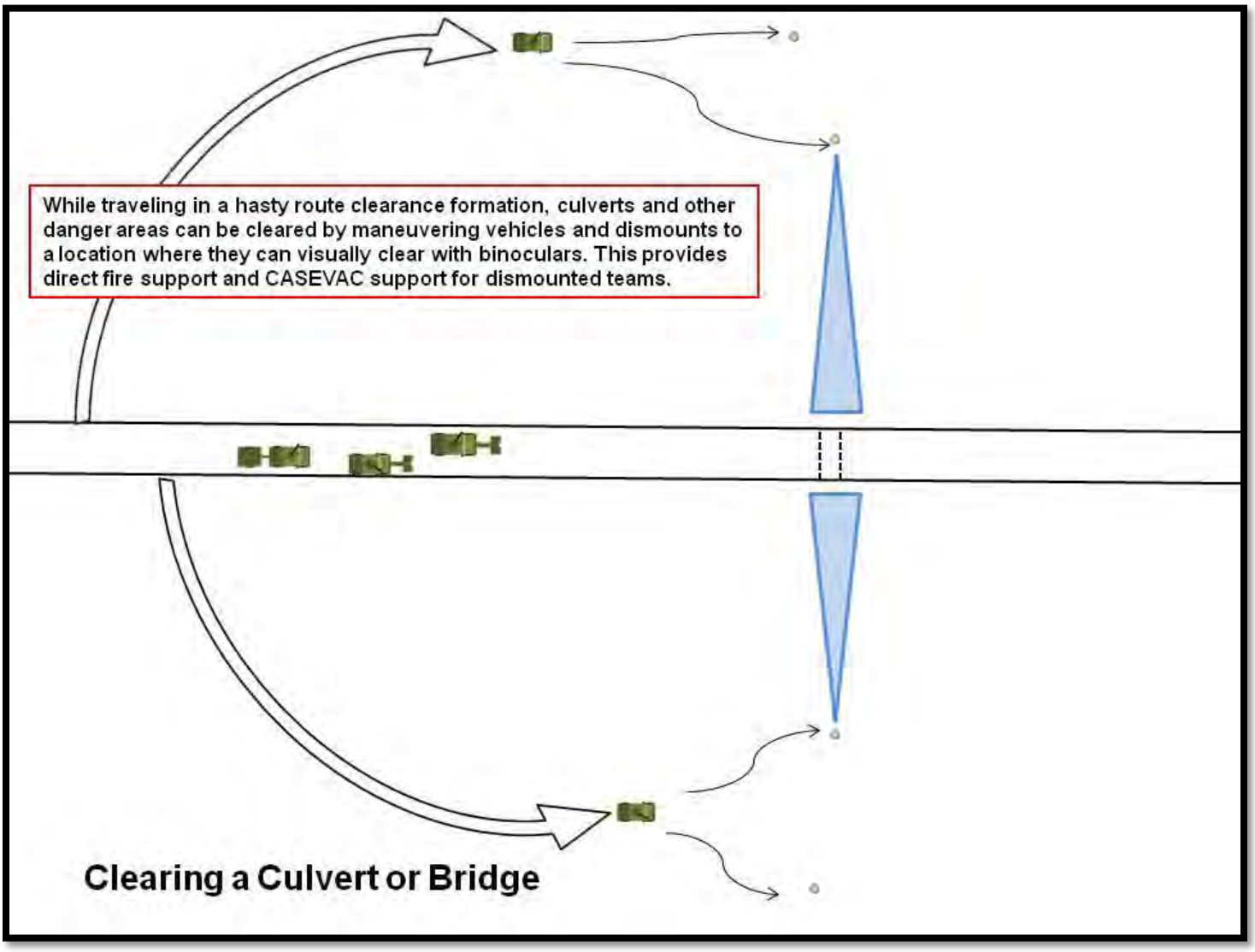


Figure 2-10 Route Clearance Platoon Clearing a Culvert or Bridge

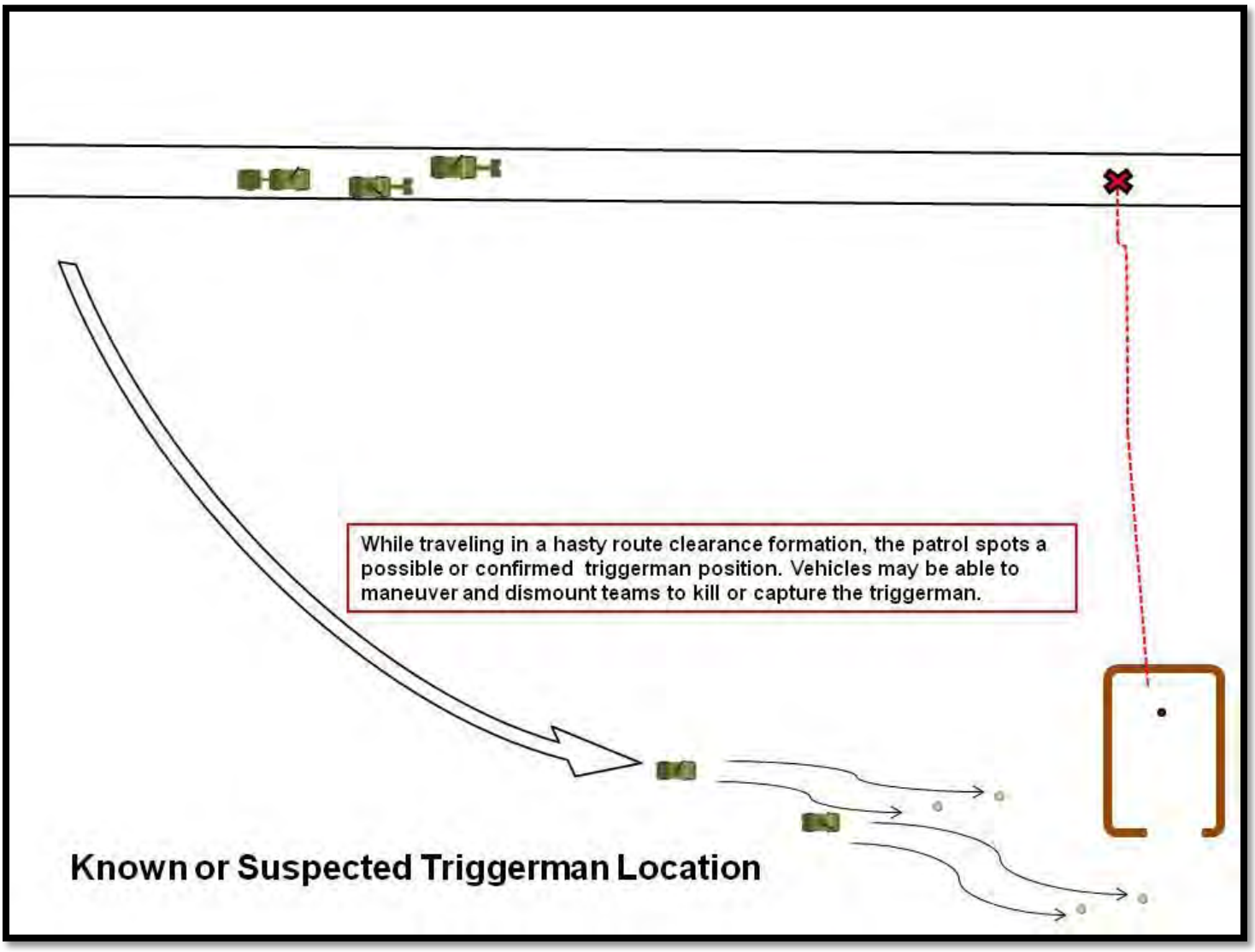


Figure 2-11 Route Clearance Platoon Maneuvering to Kill or Capture a Triggerman

k. Route clearance patrols should be provided medical, infantry and police support whenever possible. They should never operate independently. Infantry squads or platoons should move well forward of the route clearance platoon locate enemy positions. They should also scan for IED indicators and warn the route clearance platoon commander of the threat situation.

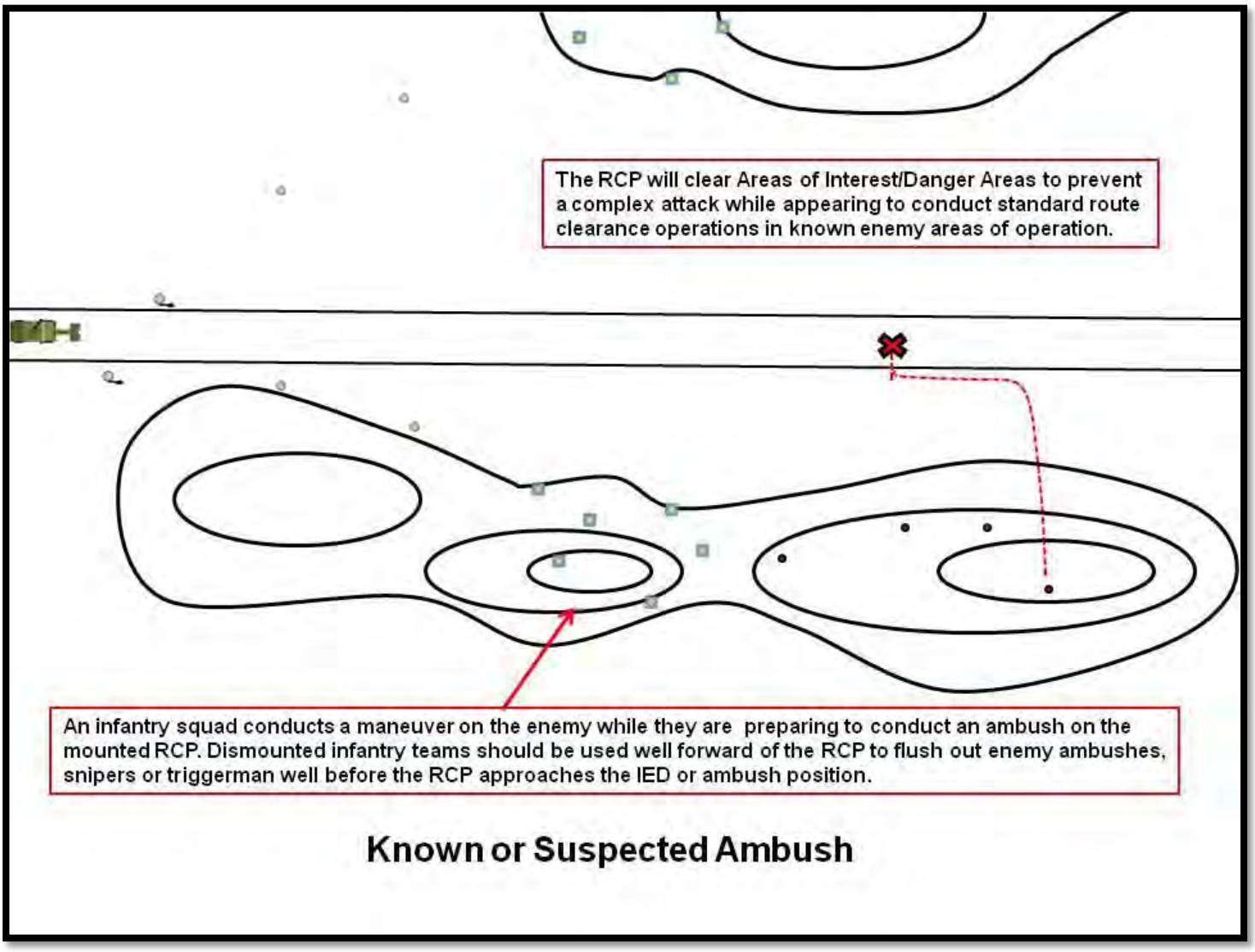


Figure 2-12 Route Clearance Platoon Supported by an Infantry Platoon or Squad

l. The route clearance platoon can also dismount teams to overwatch known IED emplacement areas. If the enemy attempts to reseed or emplace an IED behind a route clearance patrol, the dismounted team ambushes the enemy as they are attempting to emplace the IED. The route clearance patrol can turn around and return to provide support.

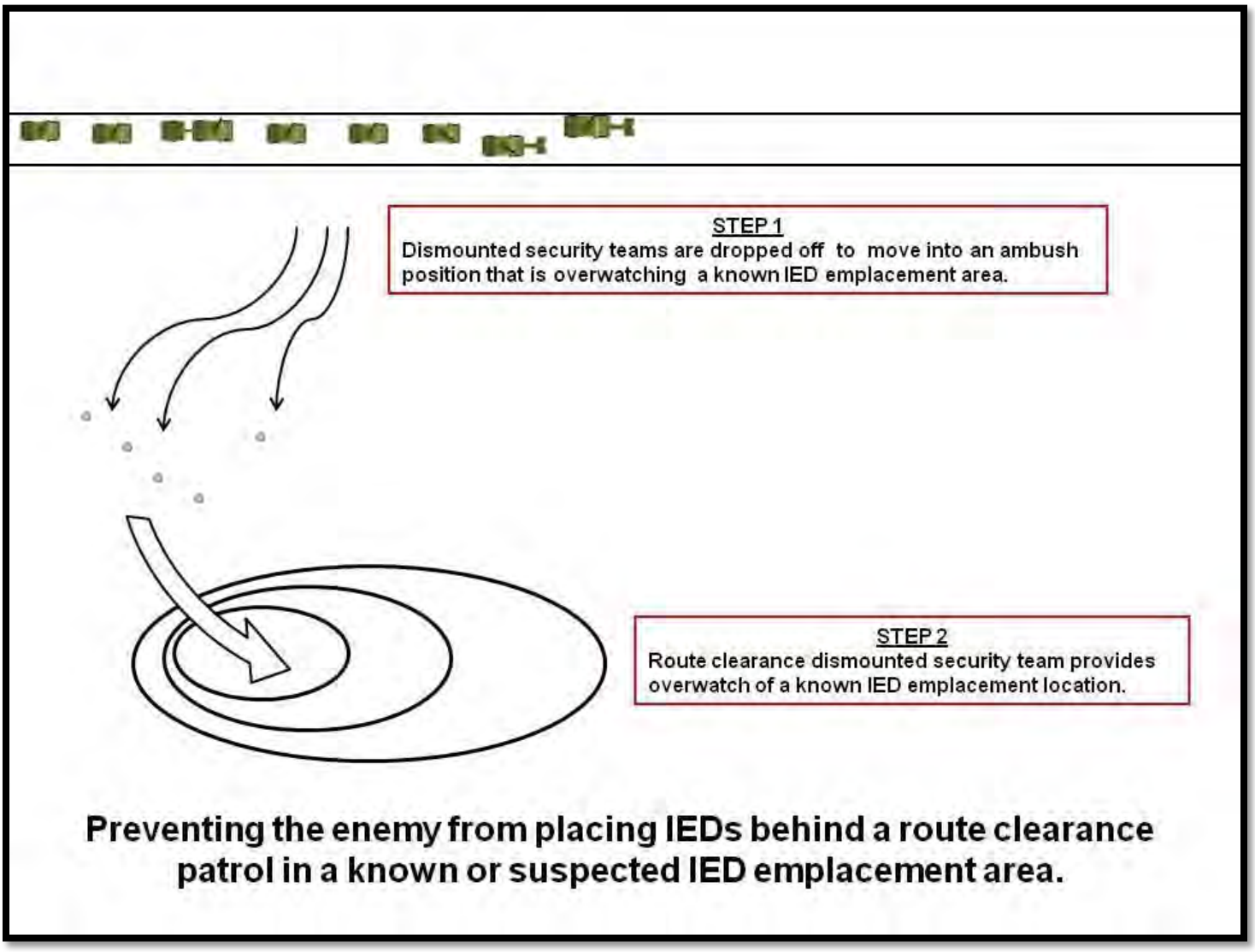


Figure 2-13 Route Clearance Platoon Using Dismounted Security Team to Prevent IED Emplacement

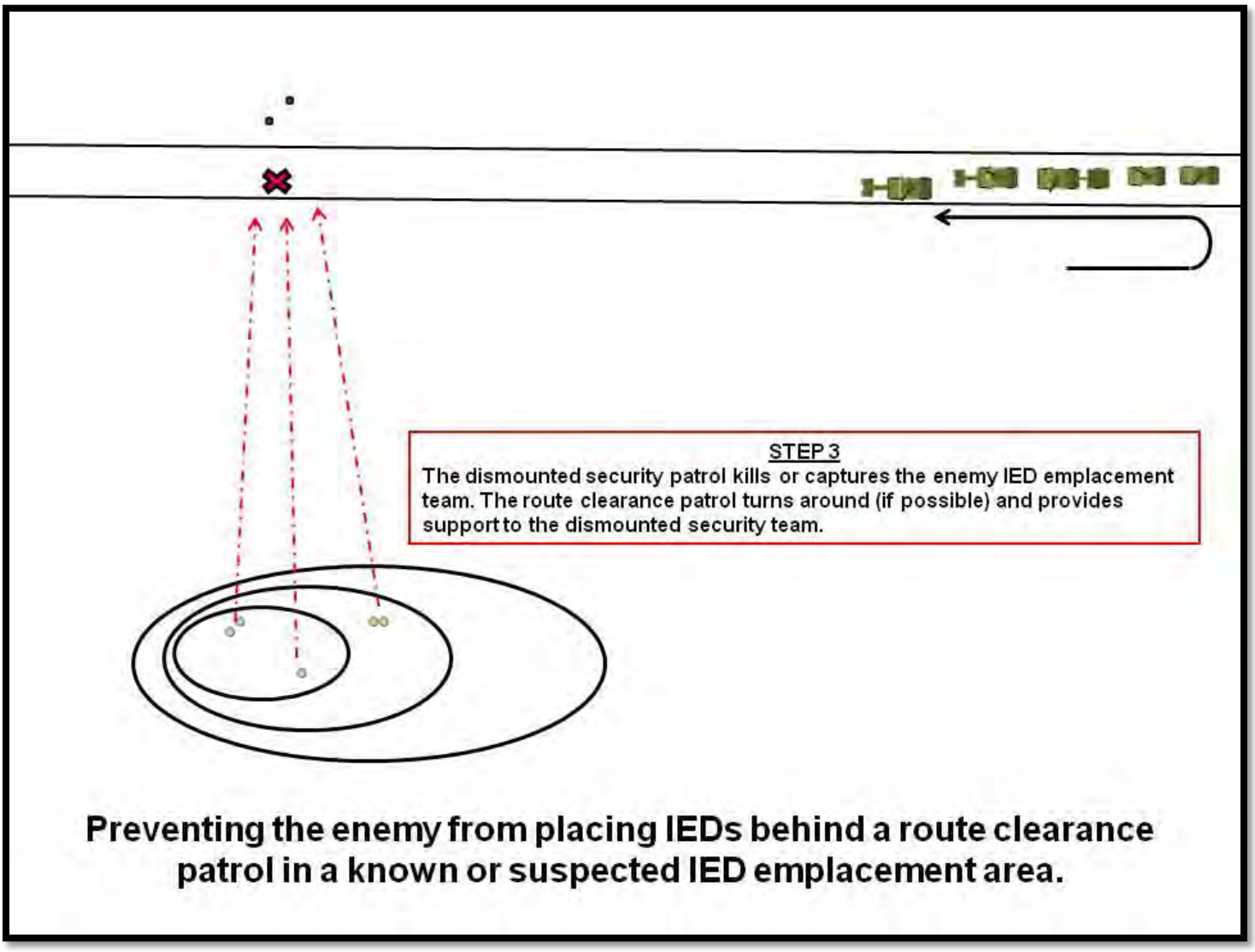


Figure 2-14 Route Clearance Platoon Using Dismounted Security Team to Prevent IED Emplacement

m. Another method used to defeat the enemy IED emplacement teams is to use two mounted patrols. The patrols are spaced apart a sufficient distance so that as the first route clearance patrol passes, the second patrol engages the enemy as he is attempting to reseed a cleared areas or to emplace an IED behind the route clearance patrol.

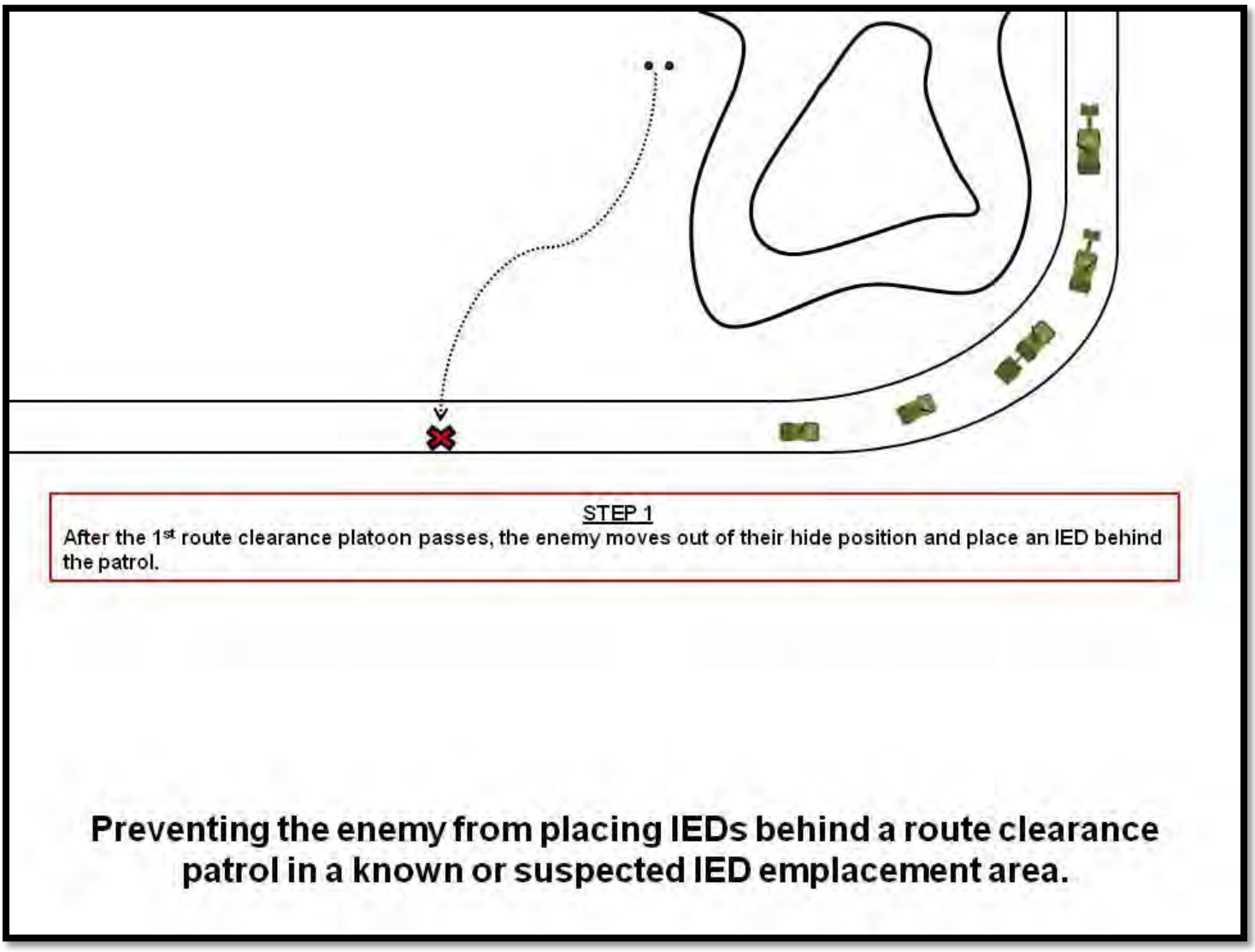


Figure 2-15 Route Clearance Platoon Using Follow on Patrol to Prevent IED Emplacement

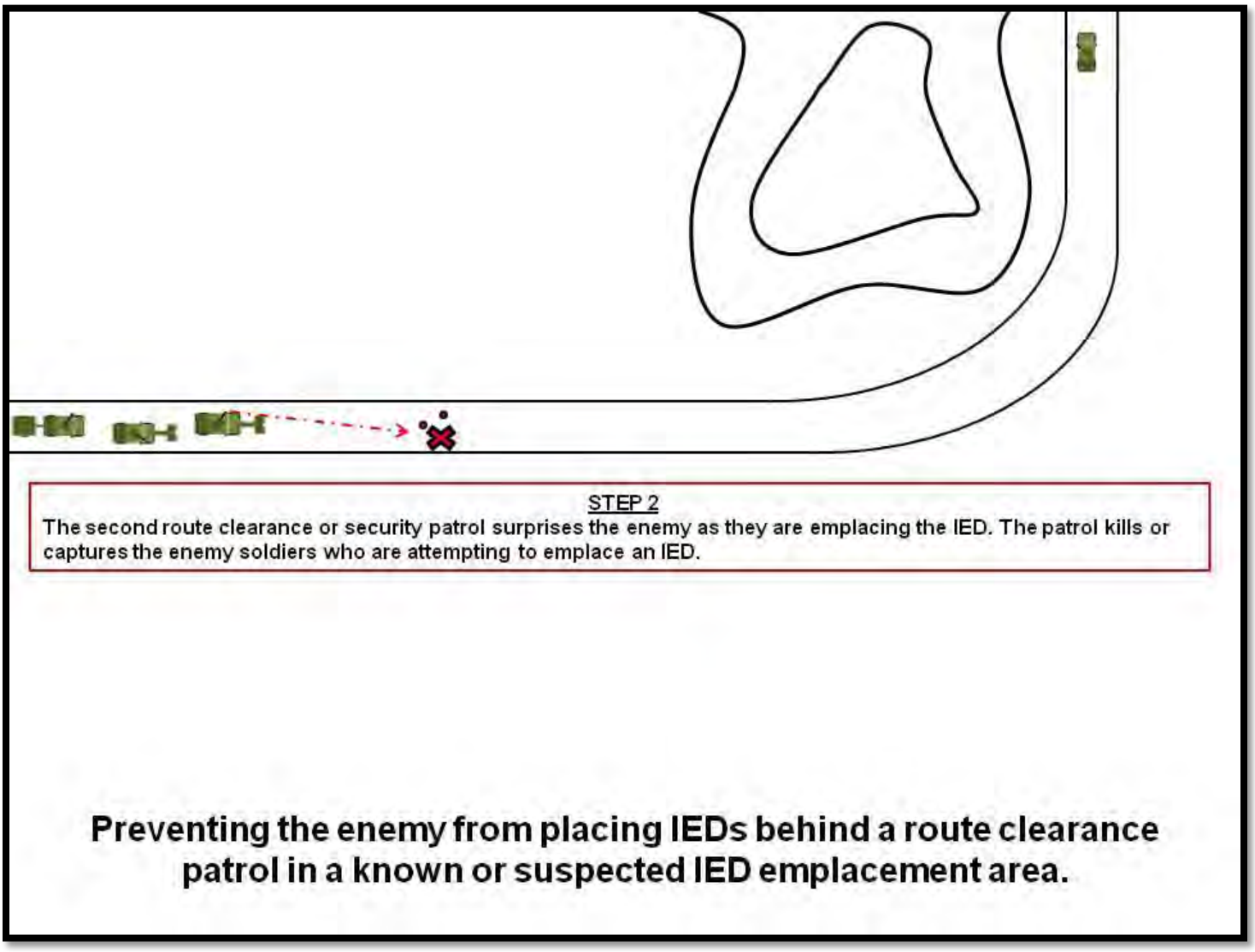


Figure 2-16 Route Clearance Platoon Using Follow on Patrol to Prevent IED Emplacement

o. These tactics, techniques and procedures should be changed frequently. The enemy observes the route clearance patrols reactions to different situations. They then use this information to plan ambushes, IED emplacements, triggerman hide locations, sniper positions, etc. The importance of changing your tactics, techniques and procedures cannot be overemphasized. Route clearance should be an offensive operation that takes the fight to the enemy.

p. When the route clearance patrol has a reasonable suspicion that they have found and IED, or multiple IEDs, all patrol members should immediately-

1. Conduct 5-0-25 and 200 checks and move to a safe distance from the IED (or IEDs).

2. Use binoculars to try to verify the presence of the IED. Soldiers or vehicles should not approach a possible IED and maintain stand-off.

3. The enemy may use hoax or fake IEDs to test your reactions and tactics.

4. If IED indicators are present, especially in known danger areas, there is a good possibility that one or more IEDs are present and the enemy is waiting to attack the patrol. Ensure gunners are scanning their sectors of fire and using binoculars to help them spot enemy activity.

5. Always assume that there will be a follow on attack after an IED strike or IED find. Expect indirect fire and direct fires from enemy positions.

6. Cordon the area around the IED or IEDs. Use armor protection and machine guns to enforce the cordon. No one should be inside the cordon. Establish an incident control point to control traffic in and out of the cordon.

7. Ensure that you clear the entire are of civilians and be on the look-out for enemy threats. The enemy may use booby traps, trip wires and multiple IEDs in the area. Dismounted soldiers are often targeted by improvised directional fragmentation charges, improvised explosives and sniper fire.

8. Call in a ten line IED/UXO report to your higher headquarters if possible. If not, write down the information and turn it in as soon as possible.

9. After the cordon is established and the area is cleared, the platoon or patrol defends the cordon while the EOD team clears the IED or IEDs. The EOD team leader is in charge of the site while the EOD team is working. If the IED is to be blown in place, the EOD team leader may have the vehicles and personnel in the cordon move to a safer distance.

10. After the IED is mitigated or rendered safe, the route clearance platoon leader will take charge of the scene and continue mission.

2-6. Route Clearance Planning.

a. A critical step in every military operation is the planning process. Planning a route clearance mission is no exception. The primary planning tool for the supported battalion or higher is the military decision making process. The role of the route clearance company and platoon leadership is to assist their supported maneuver commander in planning the operation with regard to their role and capabilities. This should include:

1. Unit Strength and Manning.

2. Mission Capable Equipment.

3. The Unit's Capabilities (level of training and experience).

4. Levels of Supply (especially fuel and water).

b. Afghan National Army units must recognize route clearance as a combined arms operation. Units routinely attempt operations to clear lines of communication without the required planning, task organization, rehearsals and battle-tracking. As a result units routinely drive roads and trails at 30 km/ph, or greater, hoping to see explosive hazards. This can lead to situations where units sustain unnecessary loss of manpower and equipment by running headlong into IEDs and ambushes. Proper mission planning and addressing shortfalls in unit training leads to proper execution of route clearance missions.

c. While current ANA counter-explosive hazard technology and detection equipment remains extremely limited, there are planning and training measures units can implement that will allow them to maintain their mobility and avoid unnecessary casualties. Successful route clearance and counter-explosive hazard operations result from a combination of predictive intelligence, planning, and then the employment of the appropriate route clearance methods using the most appropriate route clearance technique.

2-7. Predictive Intelligence.

a. Units should prepare for route clearance operations by using available intelligence to establishes an explosive hazard/ambush situation template. The corps or brigade S2 and the engineer can use this situation template to identify the most probable danger areas, and designate them as named areas of interest. Engineers should work with scouts, military police, and infantry to conduct enemy obstacle and route reconnaissance. This effort should confirm the presence or absence of ambushes and explosive hazards along a given route. Use these and other indicators as visible signs for explosive hazard locations, as well as starting points for finding the enemy and/or his cache sites.

b. Units can prepare for missions with current intelligence reports and supplement this information by studying a map before a mission. A planner or leader can look at potential firing points to determine which terrain offers good cover and concealment for the enemy. The availability of a suitable observation (from ten meters to more than one kilometer away) and a firing point(s) influences the enemy's choice for an ambush position.

2-8. IED Indicators.

a. There are multiple visual indicators that all soldiers in a route clearance patrol should be familiar with. All patrol members should be active scanning the area in front of, beside and behind their vehicle. The gunner has the greatest visibility and the highest potential of spotting potential IED indicators. The gunner should always be equipped with binoculars to increase the distance at which he can visually identify these indicators. Listed below are examples of possible IED indicators-

1. Aiming markers are used by the enemy to help the triggerman identify when to detonate the IED.

Figure 2-17 Aiming Marker

Figure 2-18 Rock Piles

2. Disturbance in road, such as prior blast holes.

Figure 2-19 Prior Blast Hole

3. Signs of digging or disturbed earth.

Figure 2-20 Signs of Digging or Disturbed Earth

4. Wires on the road, shoulder of the road, or extending to a firing point.

Figure 2-21 Enamel Coated Copper Wire on Road Surface

5. Rocks or other objects that attempt to channelize vehicle traffic or create a choke point.

Figure 2-22 Rocks Placed to Channelize Vehicle Traffic

2-9. The EOD Mission.

The EOD Team Mission:

a. The primary mission of EOD is to effectively cope with incidents involving items in support of both military and civil populace, in order to minimize the hazard to life, property, and the progress of operations inherent in incidents involving ordnance or IED's, in peace or war.

b. Qualified IEDD operators have received specialized training to effectively cope with all types of military munitions and IEDs.

c. Certified IMT Teams will have a limited capacity to neutralize IED threats, and will receive specific training to conduct threat assessment of IED's to determine their capacity to reduce these threats.

d. Explosive ordnance is defined as live ordnance, which includes bombs and warheads, guided missiles, artillery, mortar, and rocket ammunition, demolition charges, pyrotechnics, grenades, and similar or related items or components, explosive in nature, designed to cause damage to personnel or material. This definition includes all ammunition containing high explosives, biological and radiological agents.

e. The secondary mission of EOD is the destruction of unserviceable ammunition, which has become hazardous through damage or deterioration.

f. EOD personnel are task with collection of EOD technical intelligence data and material on first-seen ordnance items or IEDs for intelligence exploitation.

g. EOD Situation: An Explosive ordnance incident is a situation where unexploded ordnance (UXO) or Improvised Explosive Device (IED) presents a hazard, either actual or potential, to life, material, property, or the conduct of operations within Route Clearance Mission. The degree of existent hazard is expressed by assigning the incident to a certain category on the basis of reconnaissance, which is often conducted by personnel other than EOD. As a result of reconnaissance, evacuation, security and other protective action may have been initiated prior to the beginning of any EOD operations. The responsibility of EOD personnel will make an estimate of the situation and will usually result in one or more of the following actions.

1. Determine that no incident exists and consequent cancellation of assignment.

2. Change in categorization to bring a category assigned into alignment with EOD/IMT estimate of the hazard and/or limitations.

3. Disposal operations necessary to eliminate the hazardous situation. The disposal operation begins with EOD/IMT reconnaissance, and ends with the positive elimination of the treat created by the UXO/IED causing the incident. Final disposition of the UXO/IED may not be effective at the time.

a) Disposal Consideration: The disposal operations should include consideration of all the following elements; those applicable to the particular situation shall be acted upon.

b) EOD reconnaissance based on physical evidence and the history of the incident in all aspects.

c) Gaining access to the UXO/IED.

d) Determination of the method of disposal to be employed. This will be governed largely by the category assigned to the incident. In most cases, blow in place the preferred method in any RCC/IMT operations.

e) Determination of weather rendering safe procedures (RSP) is required prior to disposal. (IMT certified personnel are not authorized to perform RSPs)

f) Determination of the render safe procedure to be used based on ordnance items or IEDs involved and equipment availability.

g) Conduct of action required. Which procedures to be used.

h) Field evaluation; positively identify items to be destroyed if possible.

i) Ultimate disposal or recovery of ordnance items/IEDs.

j) Collection, exploitation and reporting of the incident.

h. The EOD 9 Bomb-suit and the Series 11 are the current items being fielded to the route clearance companies and EOD platoons within Afghanistan. These Suits are used only when the robot is in-operable/broken.

Figure 2-23 EOD 9 and Series II Bomb Suits

i. The MMP-30 Robot is the primary tool used on EOD incidents. It's capable of reconnaissance, neutralizing, disposing and evidence collecting of military ordnance or IEDs.

Figure 2-24 MMP 30 EOD Robot

j) Initiation Systems: EOD personnel utilizes 3 initiation systems; Electric system, Non-electric and MDI (Modern Demolition Initiators) for disposal of UXO/IEDs. EOD Equipment: Listed below is the main equipment in the Tashkil.

Figure 2-25 L22A1 Pig Stick

Figure 2-26 Projector

Figure 2-27 Hook and Line Set

Figure 2-28 Valon VMH3 Metal Detector

Figure 2-29 RTR4 X-Ray Machine

Figure 2-30 300 Meter Roll Twisted Wire

Figure 2-31 Schonstedt Magnetic Locator

Figure 2-32 M-51 Test Set

Figure 2-33 M-34 Blasting Machine

Figure 2-34 M-2 Blasting Cap Crimper

Figure 2-35 10 Cap Non-Electric Blasting Cap Box

Chapter 3- The IED Threat

3-1. The Proliferation of IEDs Afghanistan.

a. The proliferation of IEDs on the battlefield in Afghanistan has posed the most dangerous threat facing Afghan and coalition forces to date. The effectiveness of this threat has influenced unit operations, government policy, and public perception. IEDs are a weapon of choice and are likely to remain a major component of the Afghan conflict for the foreseeable future.

b. Recently, with the development of sufficiently powerful, stable, and accessible explosives, a bomb or IED has become a preferred weapon for terrorists and has been used extensively in Afghanistan. IEDs are characterized as obstacles to movement and maneuver but can also serve as a close contact weapon, depending on the intent of individual or group employing the IED. When used in conjunction with other obstacles or as a close contact weapon, IEDs are typically used to ambush military forces; assassinate key military, government, or civilian figures; or to target a particular group or organization. When an IED is used as a close contact weapon, the event is often recorded and later televised in an effort to maximize the psychological and political effectiveness of the IED and distract Afghan efforts at the strategic level. However the IED is used, as an obstacle or close contact weapon, the approach to IED defeat is the same.

c. The sophistication of the IED depends on the maker. IEDs range from being very simple to very complex with booby traps, anti-handling devices and sophisticated electronic-initiation devices.

d. IEDs may be encountered as a singular explosive hazard or as multiple devices. Generally, IEDs can be triggered in a variety of ways. Remote-controlled devices allow the exact timing of the detonation from long distances. IEDs can be manufactured out of many household products (including fertilizer and batteries), but most sophisticated IEDs use a small amount of explosive to trigger a larger quantity of explosive material. IEDs do not have to be large to be effective. Many IEDs are small and are directed at individual targets, such as military personnel or civilians. Often these are planted along a roadside and detonated as a vehicle passes. Larger devices can be buried on a road, placed under culverts or bridges, or placed in vehicles parked along the roadway or driven into the target by suicide bombers.

3-2. Ambushes and Enemy Attack Strategies.

a. Ambushes, executed in conjunction with improvised explosive hazards, are another major threat in route clearance operations. Predictive intelligence can pinpoint potential ambush sites so they can be cleared and secured. Ambushes can occur at almost any portion of a specified route.

b. There are four basic types of attacks-

1. Basic

2. Coordinated

3. Hoax

4. Mutually Supported (both small scale and large scale) attacks.

c. They can be initiated singly by a lone triggerman or by a victim initiated device. The attack may be a simple IED on the road, or in may include props that channel traffic into the kill zone. They may employ twenty or more IEDs daisy chained together.

Fig 3-1 Basic Attack

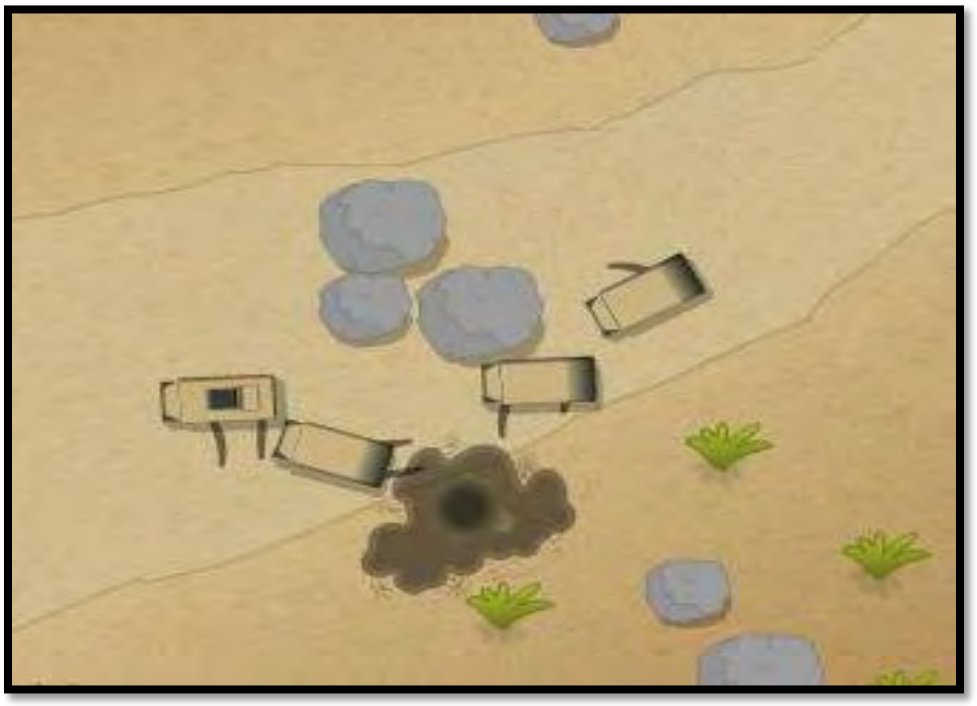


Fig 3-2 Basic Attack (Rocks Channelizing Vehicles)

Fig 3-3 Basic Attack (Daisy Chained IEDs)

d. In a coordinated attack, multiple persons carry out the event. A spotter may be posted in view of the approaching convoy, while a trigger man is located close to an escape route to avoid being seen or caught.

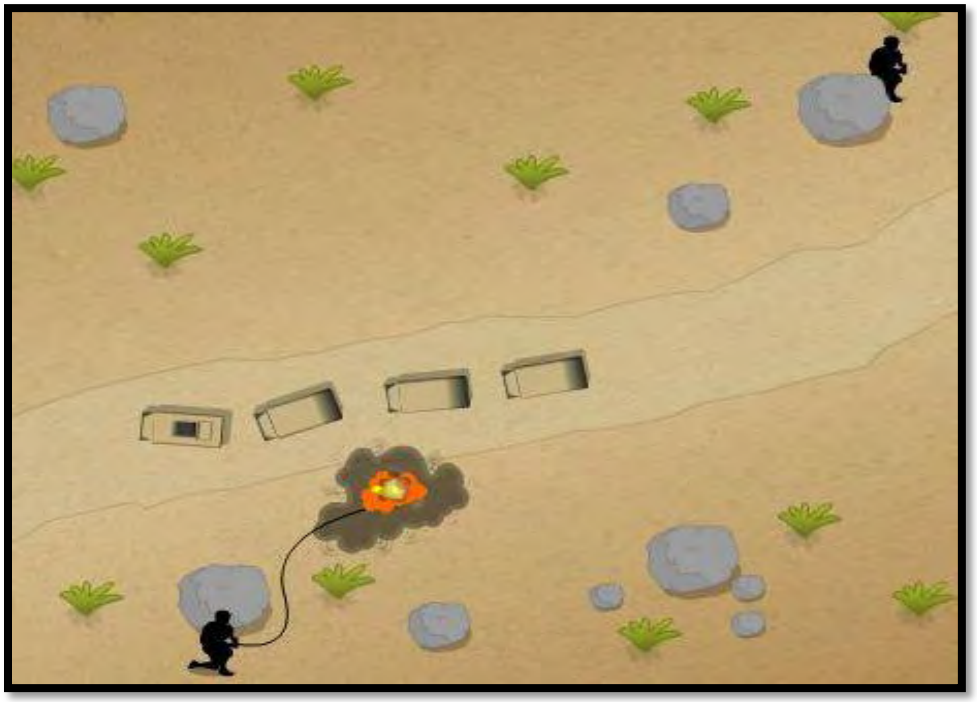


Figure 3-4 Coordinated Attack

e, The enemy may use a hoax IED. An item is placed on or near the road to cause the patrol to stop suddenly. Real IEDs are hidden on the flanks of the patrol or on the road and then detonated. The enemy may repeatedly emplace hoax IEDs to monitor your reactions and procedures so they can emplace IED where they will do the most harm. Lessons learned- *Vary your tactics, techniques and procedures and never do anything the same way twice.*

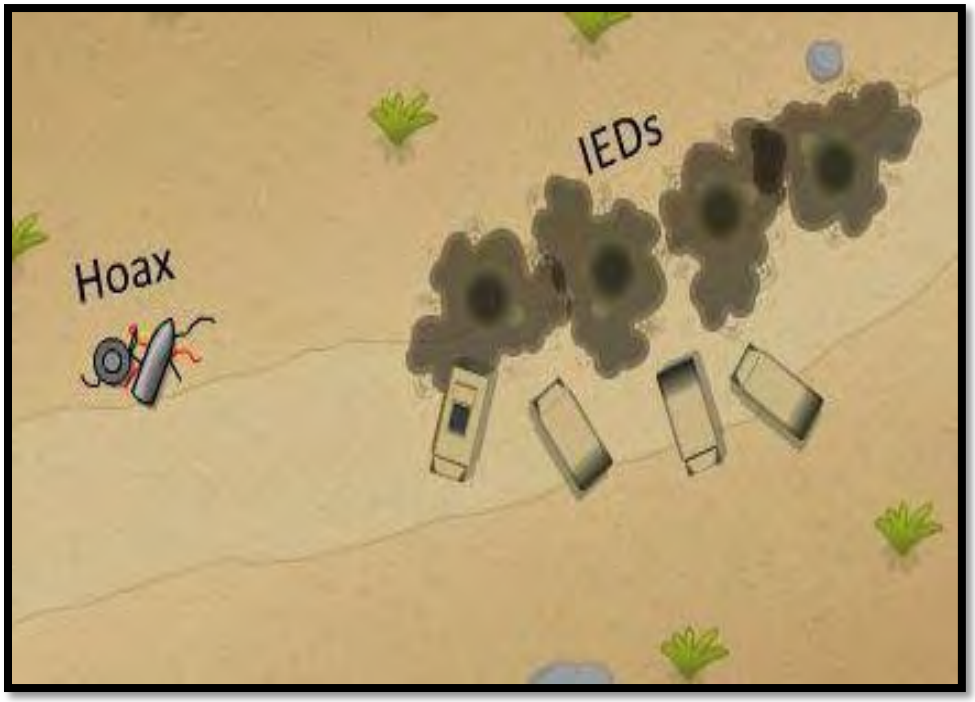


Fig 3-5 Hoax Attack

f. In a complex, mutually supported attack (small scale), one or more IEDs typically signal the ambush. Improvised claymore mines or directional fragmentation charges are common. The primary insurgent group opens fire with small arms and RPGs from a range of 75 to 200 meters. Within minutes, an over watching second line of insurgents attack from high ground 500-600 meters away with light and heavy machine guns. The primary group begins to withdraw upwards to successive prepared positions. The enemy takes advantage of rugged terrain to take cover from direct fire**.** Most insurgents break contact before air support arrives. A small stay behind group may draw fire away and fight to the death while the remainder escape and run away.

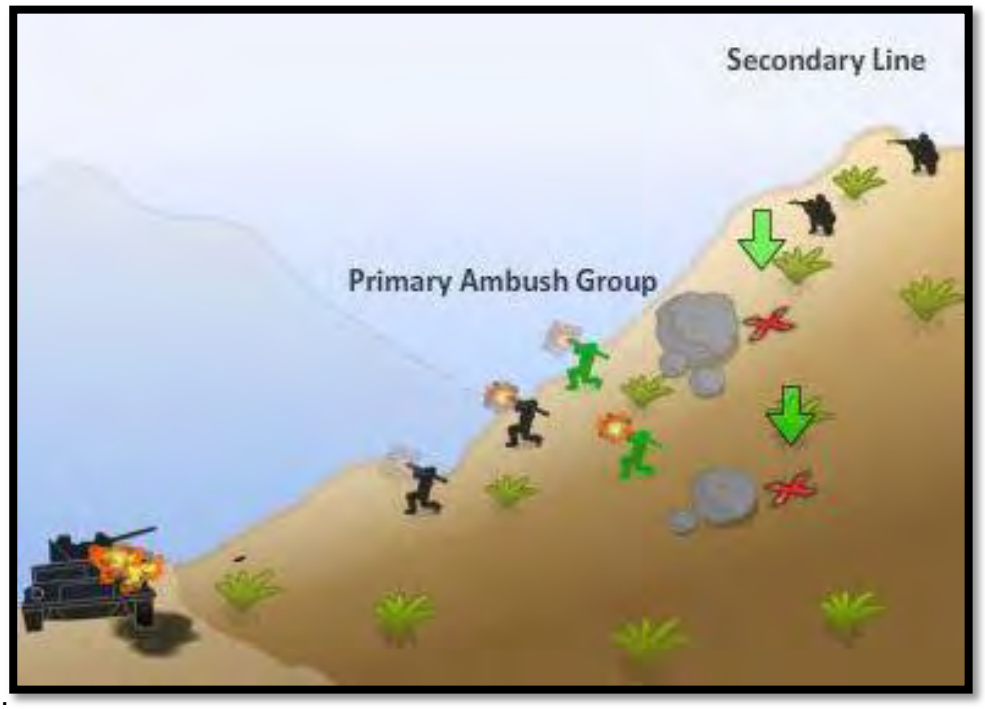


Fig 3-6 Complex, Mutually Support Attack (Small Scale)

g. In a complex, mutually supported attack (large scale), the enemy typically sets an IED ambush that blocks all escape routes for the convoy. With the convoy pinned down, a multi-zone ambush ensures that can last for hours. Small groups of 10-15 insurgents waiting nearby form into teams of 150 or more fighters. New groups continually arrive throughout the day. These insurgents do not always retreat when air support arrives. Small assault elements will break contact. Large elements may cross the kill zone to capture equipment and weapons.

Fig 3-7 Complex, Mutually Supported Attack (Large Scale)

h. The enemy can and will mass forces at their choosing. They will stand and fight, use high ground to their advantage, and place an obstacle (river, irrigation ditch, valley) between your convoy and themselves during an ambush. They will use "historic" ambush sites that have been successful and provide an easy escape route. Currently, victim-operated IEDs , radio-controlled IEDs and command wire IEDs account for the majority of IEDs in theater. To counter armored vehicles, insurgents use a higher volume of homemade explosives to include stacking anti tank mines.

i. General enemy tactics include, but are not limited to deliberate emplacement, call ahead and shadowing. The enemy targets your unit after studying your tactics. He will incorporate complex attacks, small arms fire and rocket propelled grenades. IEDs are emplaced hours, days or weeks prior to the attack and are normally well camouflaged.

1. Deliberate Emplacement- The enemy targets CF after studying friendly tactics. If their tactics are well planned and executed, the enemy may incorporate complex attacks, small arms fire, and rocket-propelled grenades (RPGs). They are not usually limited to command initiated or command armed victim-operated firing systems.

2. Call Ahead Attack- An Insurgent may be standing by the emplacement site to install the device in front of the approaching patrol. An insurgent may use a radio to direct another insurgent to install or activate the IED. The IED may or may not be well hidden or camouflaged.

3. Shadowing- Insurgents trail convoys then speed ahead to arm pre-positioned IEDs. Narrow passes and valleys are often the only means to travel between locations. The Taliban select ambush sites carefully. They are usually set up along the entrance and exit routes through canyons and other narrow passageways. The restricted terrain forces convoys to travel through natural ambush sites.

j. The road system in Afghanistan provides the enemy with a wide variety of locations perfect for ambushes and IED emplacement, especially in the numerous culverts and bridges. The enemies of Afghanistan are making an effort to reassert their dominance through repeated complex attacks mixed with IEs and conventional minefields.

3-3. IED Threat Tactics.

a. Threat tactics are different in each region of Afghanistan. Depending on the terrain, availability of materials, knowledge of the bomb makers and even the makeup and tactics of friendly forces the enemy tactics can vary greatly. However, there are basic systems and functions of IEDs that are universal.

b. Triggering the IED can be accomplished in several ways with the most common being command detonated, victim operated, timed and suicide.

c. Command detonated devices are triggered by the enemy when he wants it to go off either by direct command wire, command pull or by remote control.

1. Command wire devices are those devices that send a current of electricity from a power source to the IED through a command wire. The wire will lead from the IED to the firing point and can be anywhere from 50 meters to over a thousand meters from the IED.

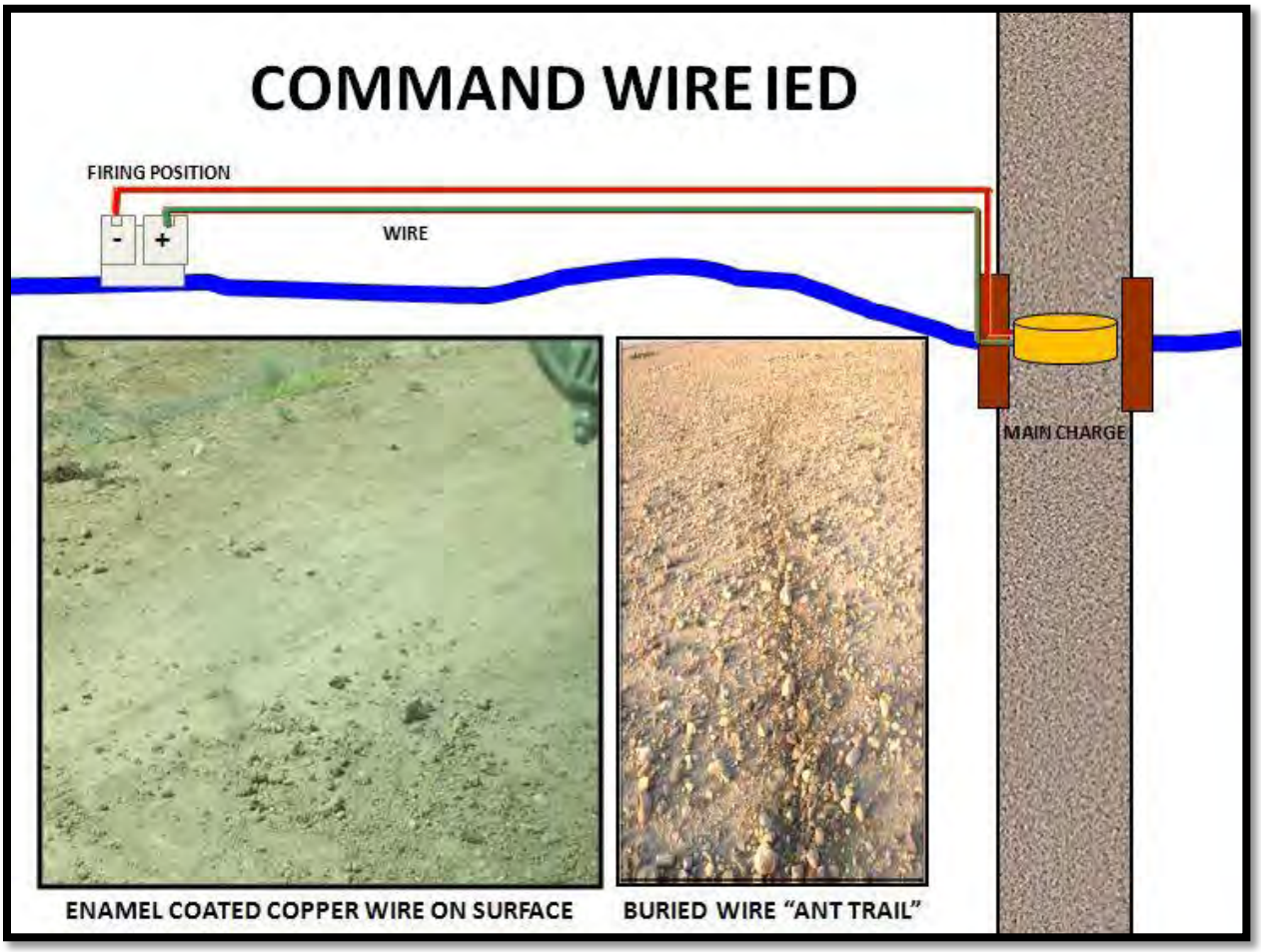


Figure 3-8 Command Wire IED

Figure 3-9 Enamel Coated Copper Wire

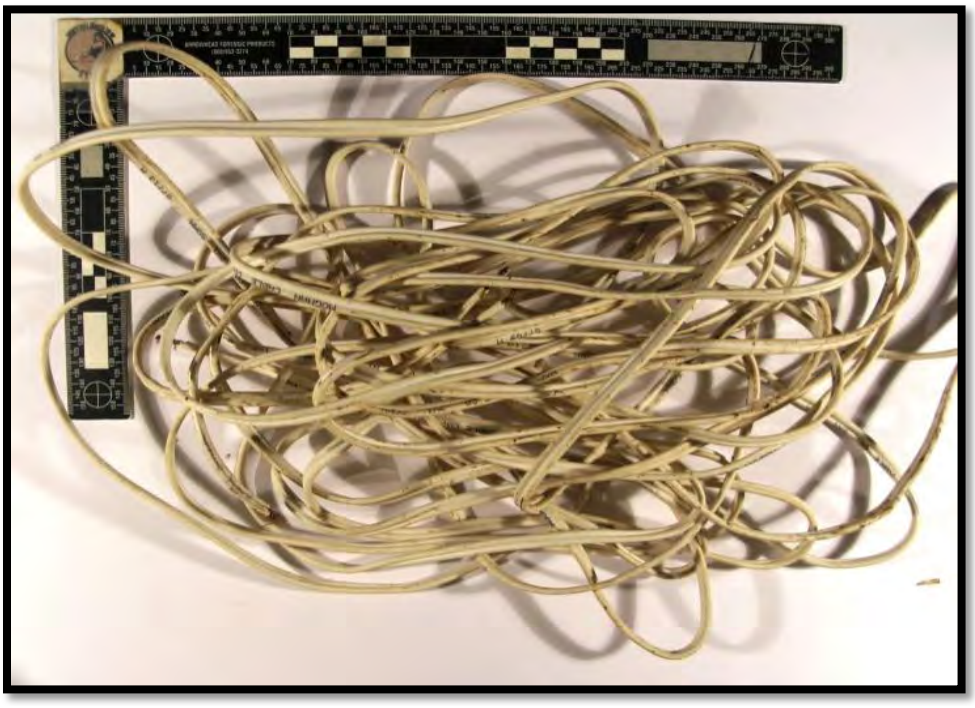


Figure 3-10 Standard Electrical Wire

2. Remote control devices use any device that sends a radio signal over a given distance from a transmitter to a receiver. Many devices can be used over distances over 1000 meters. The major advantage to the enemy is that there is no wire leading to his hiding position. The receiver can be placed far from the IED and connected to the IED with a wire outside of the range of jamming devices.

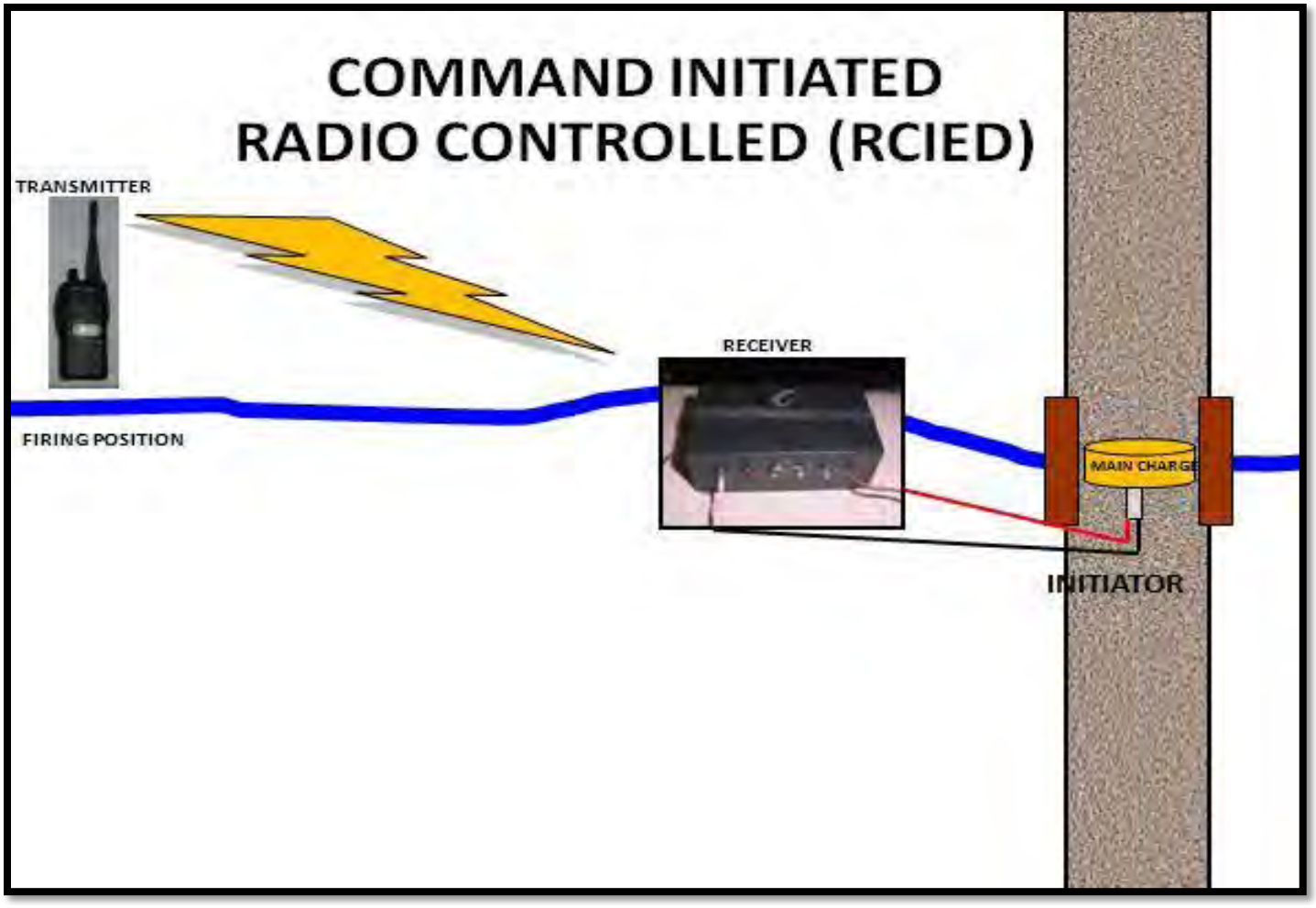


Figure 3-11 Example of Remote Control Device

Figure 3-12 Example of Radio Transmitters

Figure 3-13 Example of Transmitters and Receivers

d. Victim operated devices rely on the intended victim or target of the IED actually triggering the device. The trigger is not always obvious but can be seen by the eye in many cases. Common varieties include trip wire, pressure plate and pressure release devices.

1. Trip wires and command pull wires are used to detonate or arm an IED. The wires may be loose or taught. Never cut a trip wire; it may be designed to trigger the IED when the pressure is released. A command pull wire may detonate the IED, or merely close the circuit to arm the IED. The enemy can use the command arming wire to select which vehicle or soldier(s) he intends to target with the IED. Remember, just because the vehicle(s) ahead of you were not struck with an IED does not mean that there is not an IED present. The enemy can pick and choose when he wants the IED to be armed or detonate.

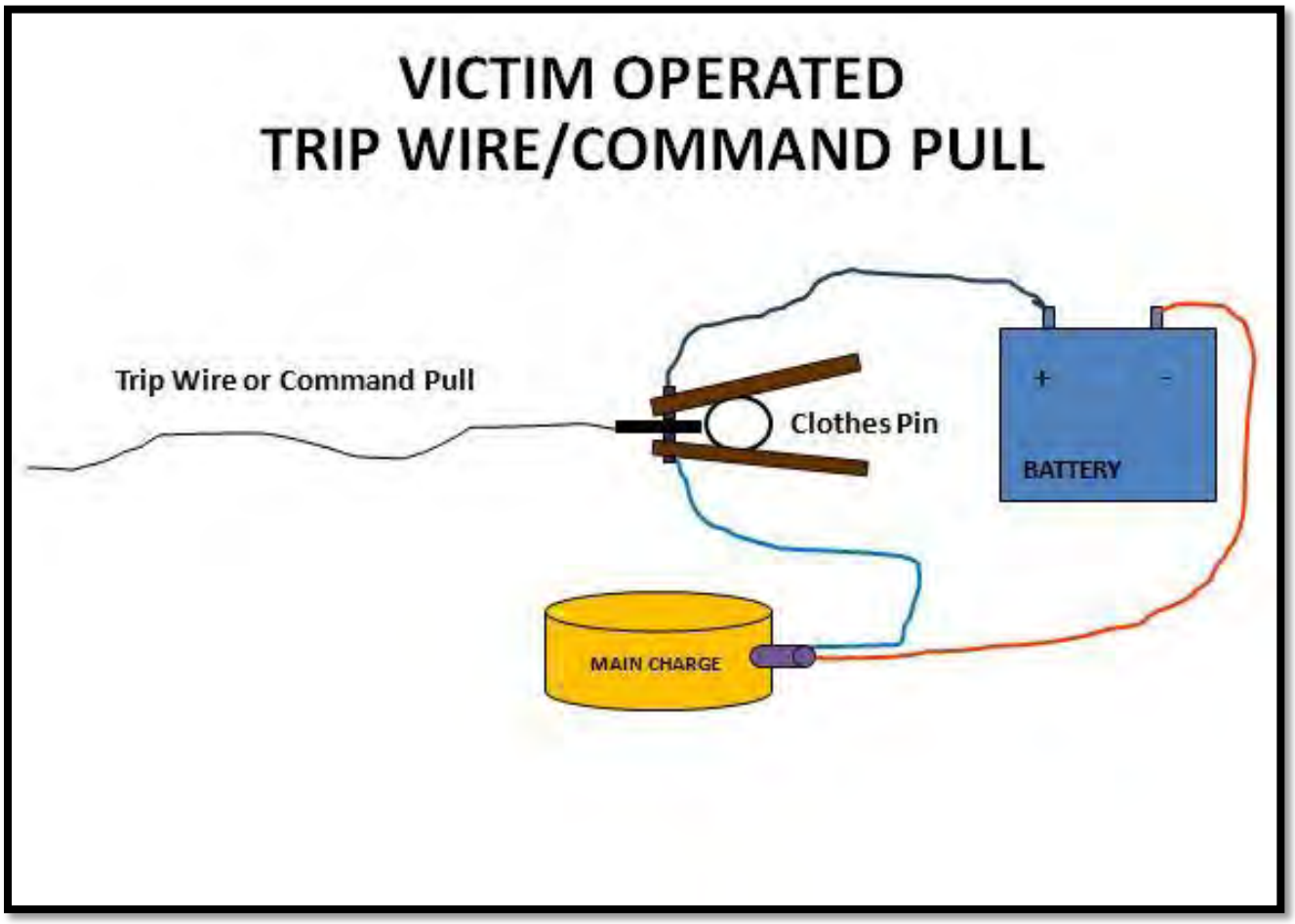


Figure 3-14 Example of a Trip Wire or Command Pull IED

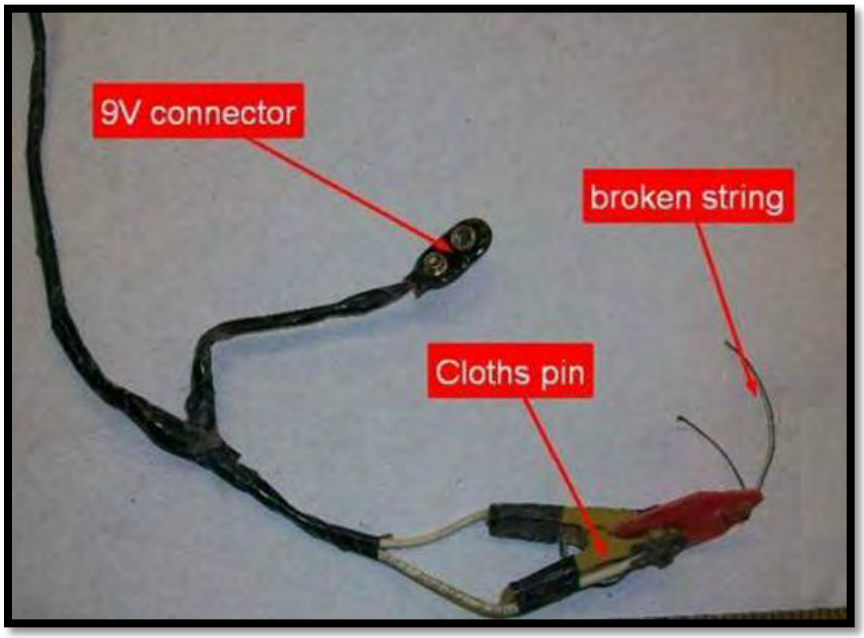


Figure 3-15 Example of a Command Pull Device

Figure 3-16 Example of a Command Pull Device (Clothes Pin Switch)

2. Pressure plate devices are usually employed at the surface of the ground or just beneath it. They are harder to detect with visual means and are common on roads where the surface is not paved or solid. Soft sand or thick dust on roads are perfect hiding places for pressure plates. Pressure plates may contain large amounts of metal, small amounts of metal, or no metal at all. Pressure plate devices rely on the target applying enough weight on the pressure plate to connect an electric circuit.

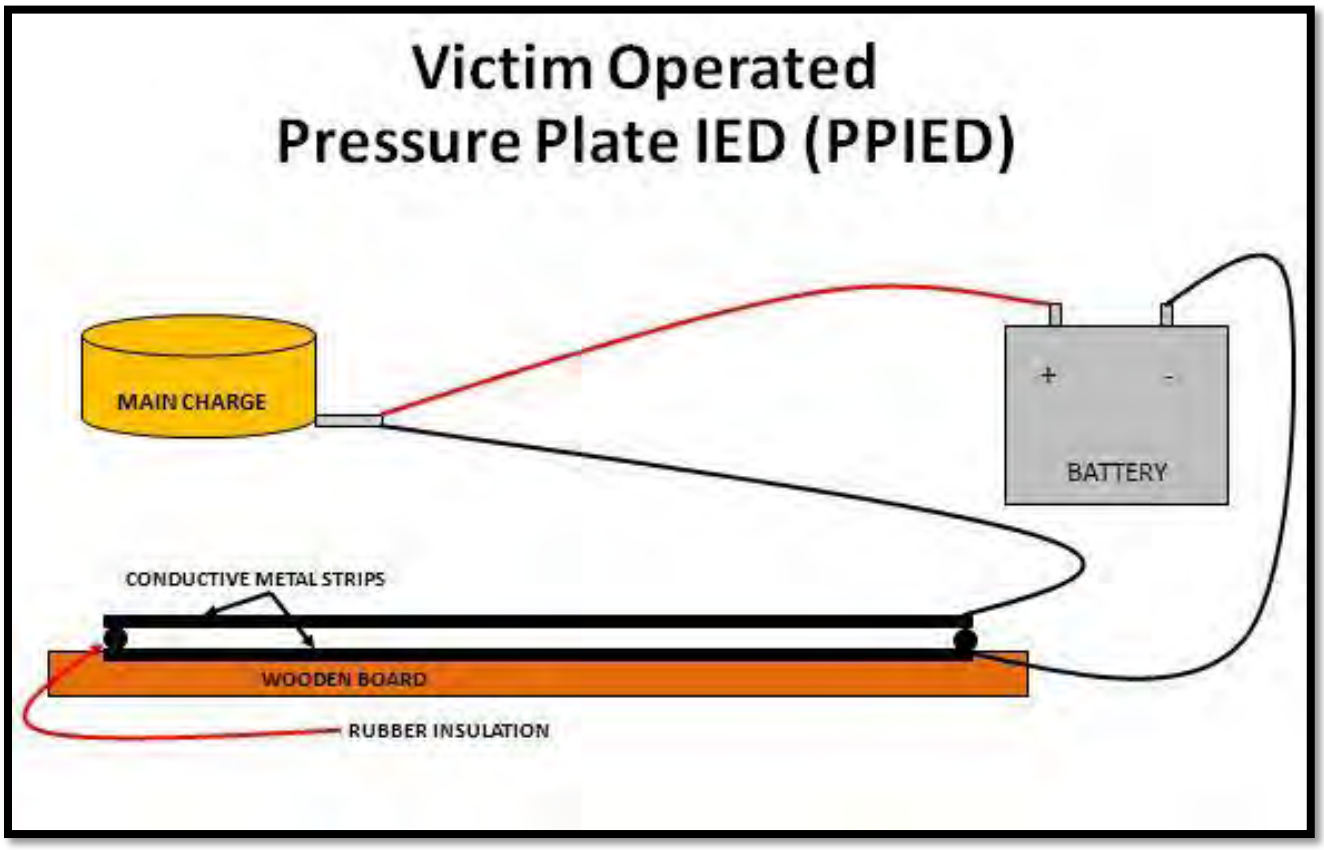


Figure 3-17 Example of a Pressure Plate IED

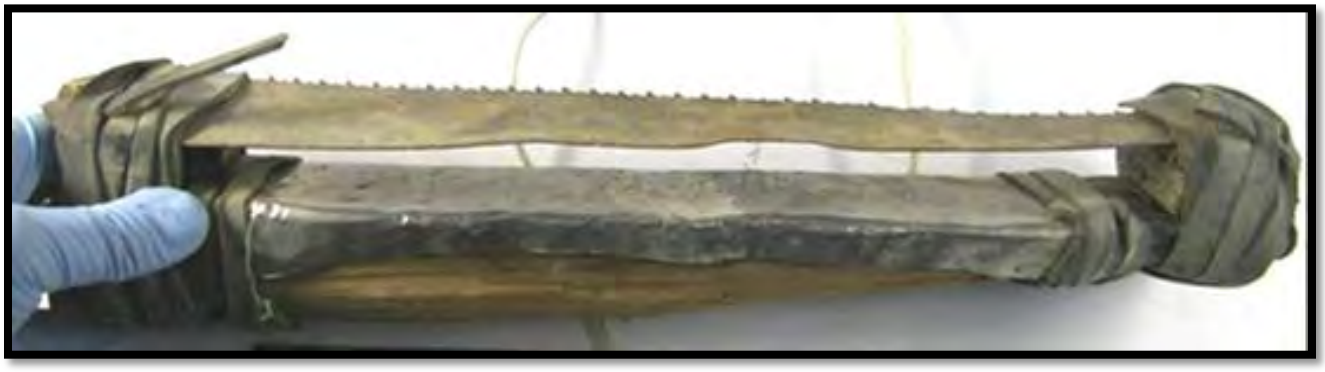


Figure 3-18 Pressure Plate (Sawblade)

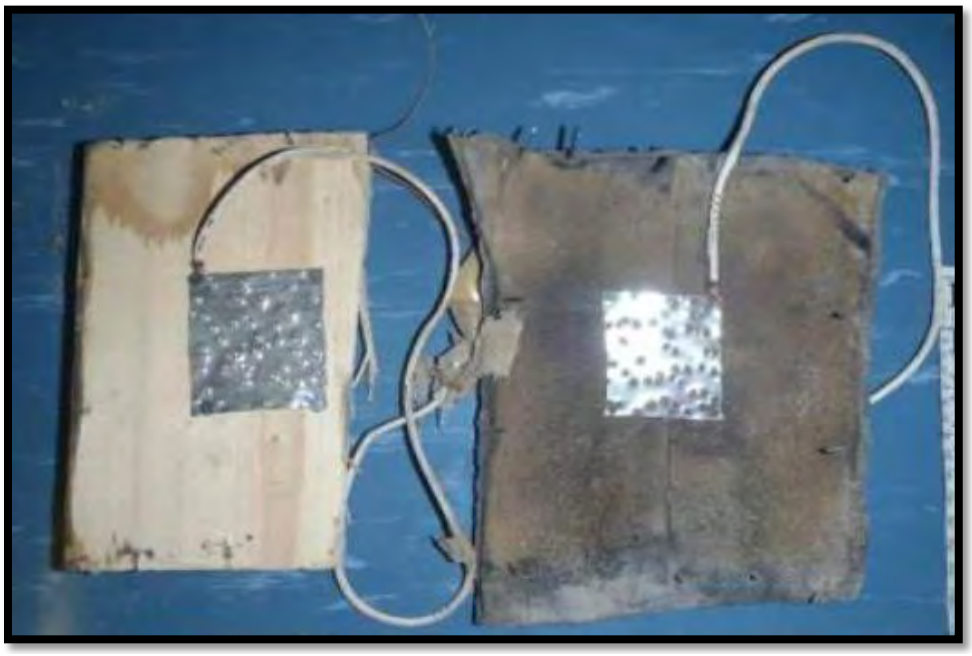


Figure 3-19 Pressure Plate (Snap Back)

Figure 3-20 Examples of Pressure Plates

3. Anti lift devices are designed to function when an item (main charge, pressure plate, etc.) is lifted. This is why the rule is "if you did not put it there, do not pick it up". An anti lift device is an open electrical circuit that closes when a weight is removed.

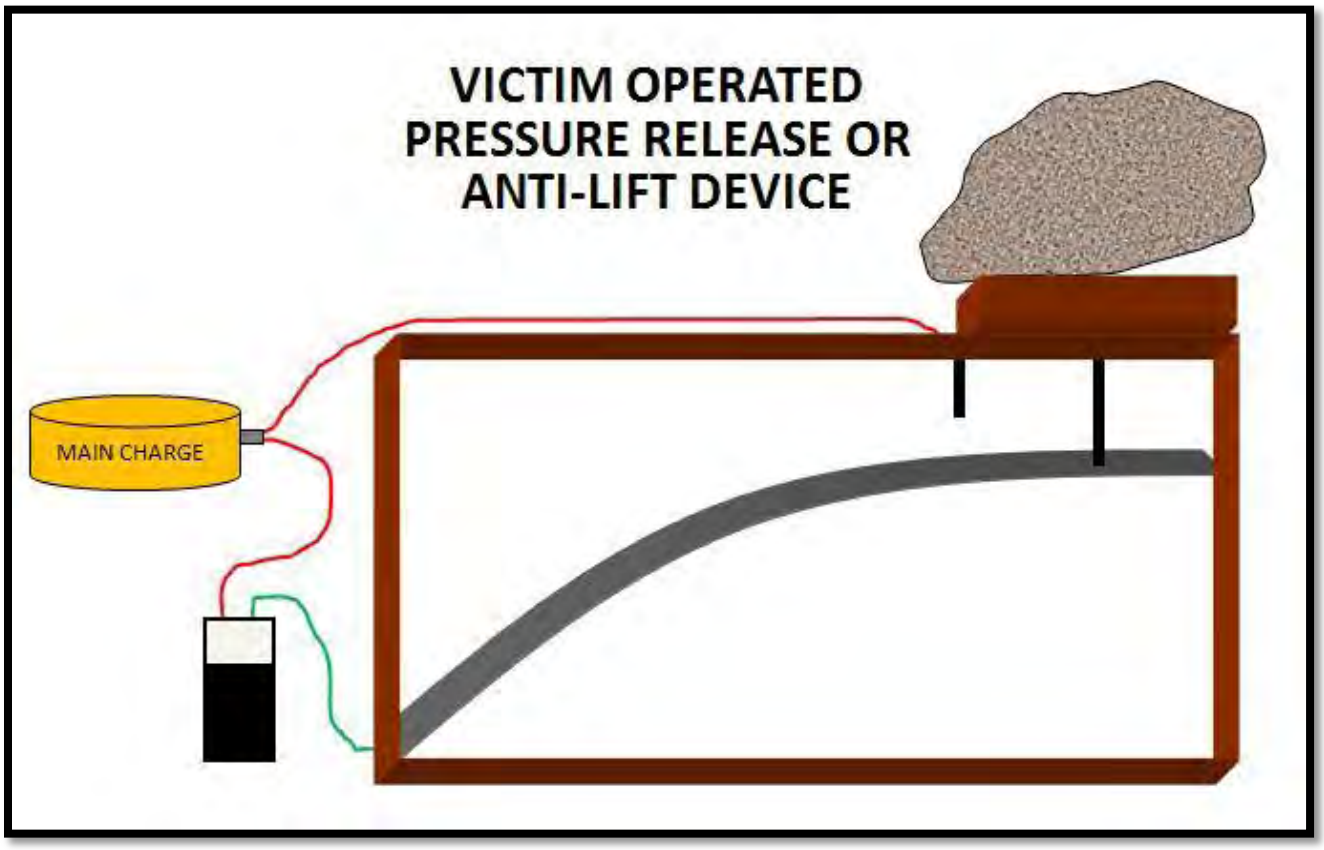


Figure 3-21 Example of an Anti-Lift Device

Figure 3-22 Example of an Anti-Lift Device

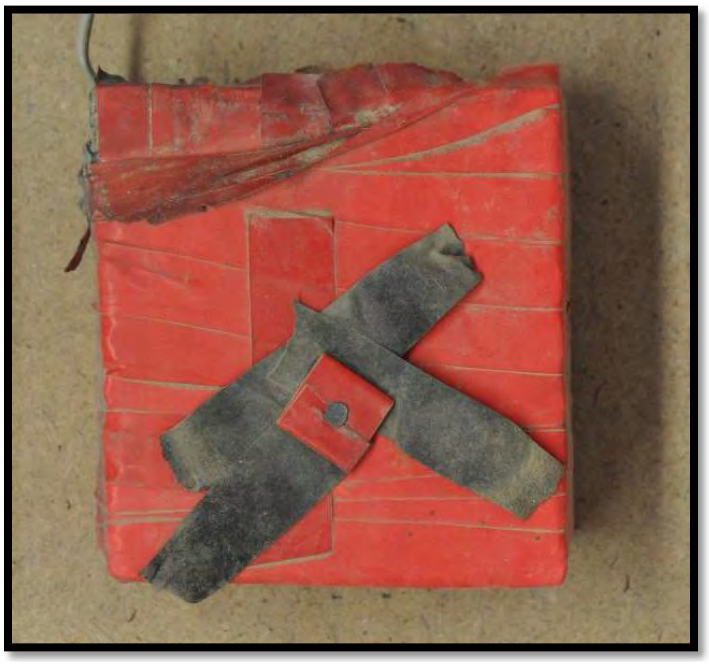


Figure 3-23 Example of an Anti-Lift Device

4. Improvised devices such as a directional fragmentation charge or an improvised claymore are designed to target dismounted soldiers, light skinned vehicles and exposed personnel or gunners. They project metal or other shrapnel at the target at a high velocity. With the directional fragmentation charge, the shrapnel is focused on the target. The improvised claymore sprays shrapnel over a wider area. Both devices can be command detonated or victim operated.

Figure 3-24 Example of a Directional Fragmentation Charge

Figure 3-25 Example of an Improvised Claymore

5. Suicide devices are guided to their intended target by a suicide bomber either carrying the explosive on their person or in a vehicle ranging in size from a bicycle to a large truck. Suicide devices are most effective against stationary or slow targets. They can be triggered by the bomber directly or by a second bomber by remote control.

Figure 3-26 Example of a Suicide Vest

Figure 3-27 Suicide Motorcycle IED

Figure 3-28 Suicide Vehicle Borne IED

3-4. Device Placement, Danger areas and Vulnerable Points

a. IEDs are generally placed where the enemy thinks the intended target will hit them. In Afghanistan movement in many places is restricted to roads, trails and paths. Other factors such as ease of access, good escape routes, tight turns or steep grades, and good hiding spots determine likely locations for placement of IEDs. Looking at past events and placements can give clues to future and most likely placements. These areas are known as danger areas or vulnerable points.

1. Culverts, bridges, pre-existing holes (pot-holes) and prior blast holes are ready made places where explosive devices are placed often.

Figure 3-29 Danger Area- Bridge or Culvert

Figure 3-30 Danger Area- Culvert with IED Inside

Figure 3-31 Danger Area- Prior Blast Holes

2. Tight corners, steep grades, and narrow passages (choke points) are favorable placement locations because they make the target more vulnerable, predictable and slower. This makes the target easier to hit.

Figure 3-32 Danger Area- Steep Hill

Figure 3-33 Danger Area- Choke Points, Narrow Places in the Road

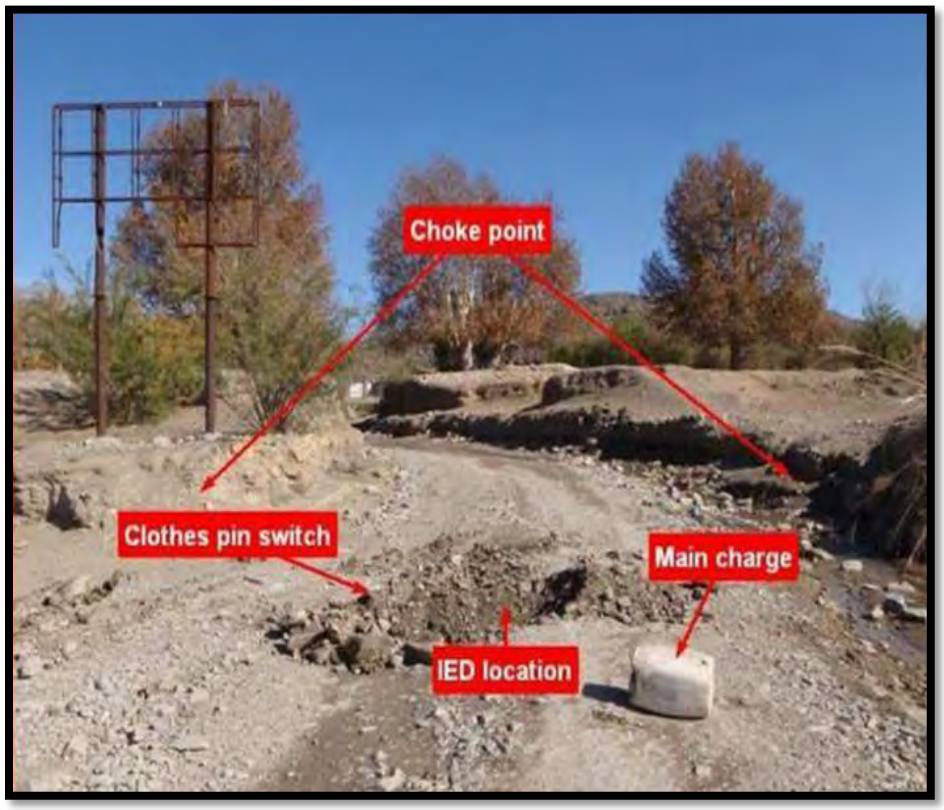


Figure 3-34 Danger Area- Choke Points

3. Wadis and wash outs are prime areas to place IEDs. It is very difficult to visually detect pressure plates or other trigger devices in these locations.

Figure 3-35 Danger Area- Washed Out Section of a Road

Figure 3-36 Danger Area- Wash Out

4. Soft sandy areas and heavy, thick dust (moon dust) on roads are easy places to place mines or pressure plates. They are easy to camouflage and emplacement only takes a minute.

Figure 3-37 Danger Area- Soft Sand

5. Walls or high ground near a road are popular places for the enemy to emplace rockets, directional fragmentation charges, or claymore mines that target gunners or exposed personnel.

Figure 3-38 Danger Area- Walls

6. Road junctions or intersections are often used to emplace IEDs.

7. Bypasses can be a sign of local traffic avoiding an IED site. Be aware that bypasses are often IED locations as well, and should be cleared.

Figure 3-39 Danger Area- Bypass

b. Danger areas should always be deliberately cleared by dismounted soldiers. Mine detectors should be used to detect metal pressure plates, battery packs and wires. Maintaining standoff and using binoculars or spotting scopes to scan danger areas is the first step in clearing any danger area or confirming a suspected IED. Driving over or through known danger areas without a dismounted clearance is very dangerous and can result in multiple deaths or serious injuries. Route clearance units are expected to clear these areas for follow on traffic. Bypassing danger areas or suspected IEDs is not route clearance.

3-5. Secondary Devices.

a. A secondary device is any additional device with a separate trigger that is usually designed to attack first responders such as police, medical personnel or EOD. The use of additional devices makes IEDs extremely dangerous and should only be handled by highly trained explosive ordnance disposal technicians. As a rule, if you find one IED, there are more in the area. If you do not find them, you have not properly cleared the area. The enemy may detonate the other IEDs when they will do the most harm.

3-6. Explosive Main Charge.

a. In the past, many IEDs were made using military ordnance, or used military grade explosives as fillers. Presently, homemade explosives account for most of the IEDs in Afghanistan. They are cheap and are made using fertilizer and other readily available chemicals and compounds. Large quantities can be used to badly damage or even destroy heavily armored vehicles.

b. Examples of military ordnance include bombs, rockets, mines, grenades, and artillery rounds. Most IEDs that contain military ordnance can be detected with metal detection equipment because of the metal casings of most military ordnance. Some military ordnance, such as the TC-6 anti-tank mine, contain a very small amount of metal and are very difficult to detect.

Figure 3-40 TC-6 Anti Tank Mine

Figure 3-41 82mm Mortars

Figure 3-42 Russian TNT

Figure 3-43 PMN Anti Personnel Mine

3-7. Home Made Explosives.

a. Home-Made-Explosives range from ammonium nitrate to nitrogen phosphate based explosives. They are more difficult to detect with metal detection equipment because they don't usually have the metal content in the casings normally found in military ordnance. Plastic 20 liter palm oil jugs or plastic buckets or cans are often used as a container. They are filled with homemade explosives and have a very low metal content. Several small containers or a few large containers can contain from 5 kg up to 350 kg of explosives. A large IED using homemade explosives can easily destroy a heavy battle tank.

Figure 3-44 Homemade Explosives

Figure 3-45 Plastic Jugs Used for Homemade Explosive Containers

Figure 3-46 Homemade Explosive IED

Figure 3-47 Homemade Explosive IED

Figure 3-48 Homemade Explosives

Figure 3-49 Homemade Explosives in a Pressure Cooker

Appendix A- Garmin eTrex Global Positioning System

Figure A-1 Garmin eTrex Global Positioning System

a. The Garmin eTrex is a lightweight, 12 channel, hand held global positioning system receiver. It has a built-in antenna and five user buttons. All buttons are located on the sides of the device, allowing for simple, one handed operation. It runs up to 22 hours on two AA alkaline batteries on battery save mode.

b. In addition to determining your location, the eTrex creates, names and saves locations (as an electronic waypoint) in its memory, allowing you to navigate back to this point at any time. Once you start moving, your eTrex provides other data, such as speed, direction of movement, time and distance to destination, and more.

c. The trip computer tracks your average speed, current speed, maximum speed, direction of movement, bearing, elevation, time of sunrise/sunset, trip timer and trip odometer. The eTrex is accurate to within 15 meters of your exact location on a military map.

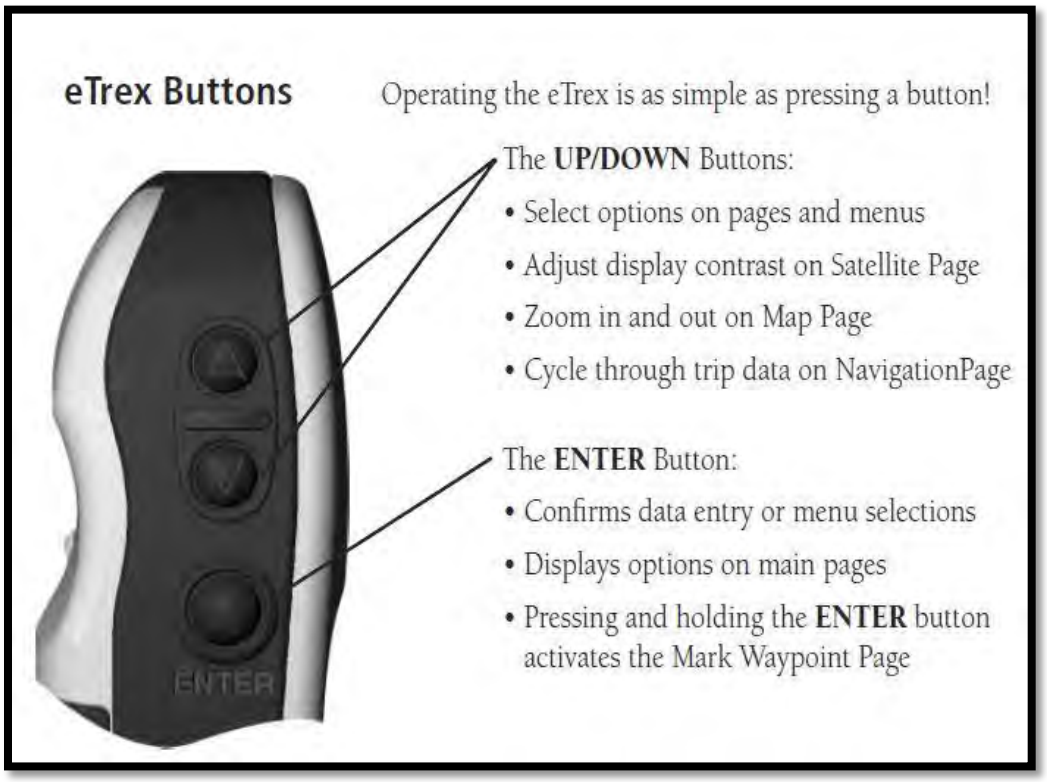


Figure A-2 Garmin eTrex Buttons (Left Side)

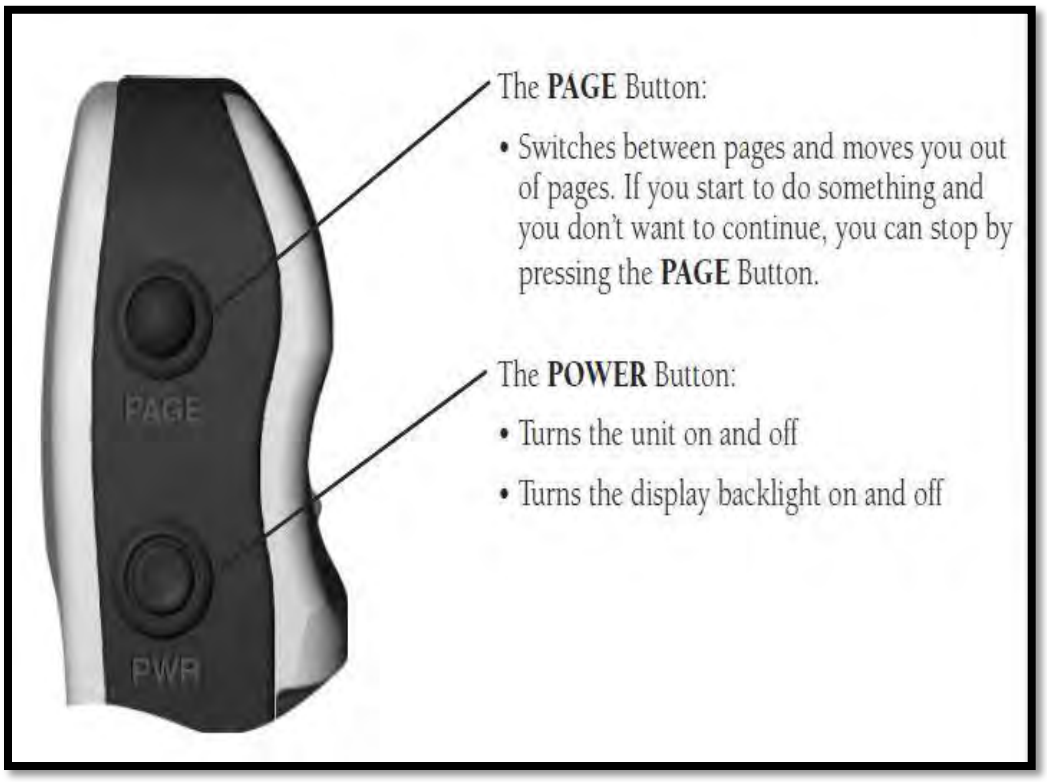


Figure A-3 Garmin eTrex Buttons (Right Side)

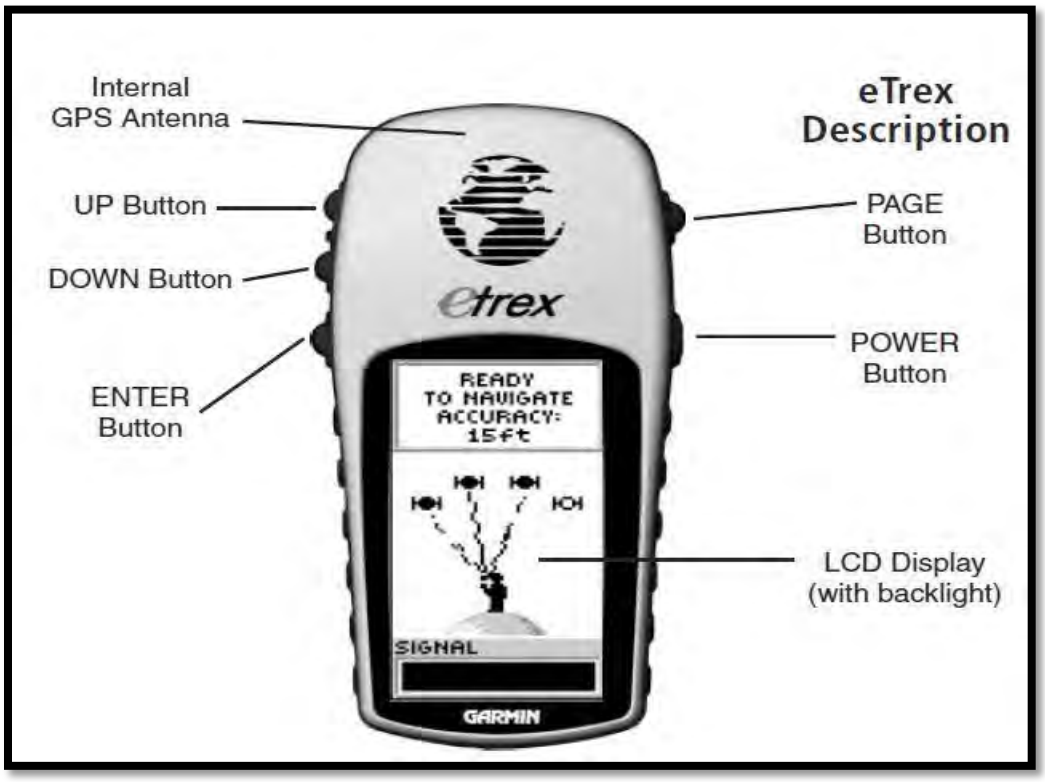


Figure A-4 Garmin eTrex Description (Front Side)

Figure A-5 Garmin eTrex Description (Back Side)

d. The eTrex operates on information gathered from satellites. To gather this information, take the eTrex outside and find a large, open area that has a clear view of the sky. Press and hold the **POWER** button to turn the unit on. You will see the welcome page for a few seconds while the eTrex performs a self-test, followed by the satellite page (Figure A-?). The **READY TO NAVIGATE** message must appear on the screen before you can use the eTrex to navigate.

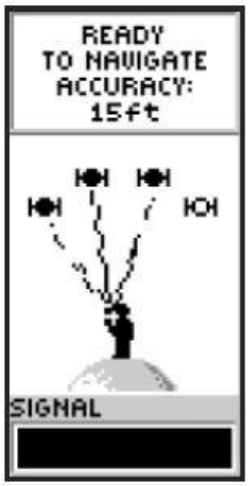


Figure A-6 READY TO NAVIGATE screen

e. The satellite page shows the eTrex is gathering all the necessary satellite information in order to work. There are two display options on the satellite page, **NORMAL SKYVIEW** and **ADVANCED SKYVIEW**. Normal skyview shows you the satellites, satellite strength and the estimate location accuracy.

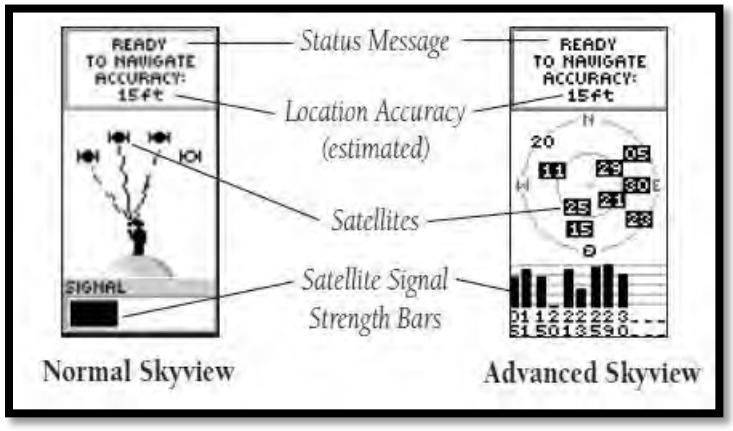


Figure A-7 Normal and Advanced Skyview

f. To activate the Advance Skyview page, press **ENTER** when on the satellite page, then select "Advanced Skyview" and press **ENTER** again. This page displays the numbered satellites the eTrex is using and their individual signal strengths.

g. To change which screen you are using, use the up and down button on the upper lefts side of the eTrex. A picture of the button is on Figure A-?.

Figure A-8 Up and Down button

h. The eTrex is not like a magnetic compass. You must be moving in order for it to track your movement.

i. The navigation page helps guide you to your destination. When you are moving with no particular destination in mind, the navigation page shows you your moving direction and speed. When you are moving towards a specific destination, the navigation page shows you the name of the location, the distance and time to go, and displays a large direction arrow in the ring. To navigate, simply follow the large arrow.

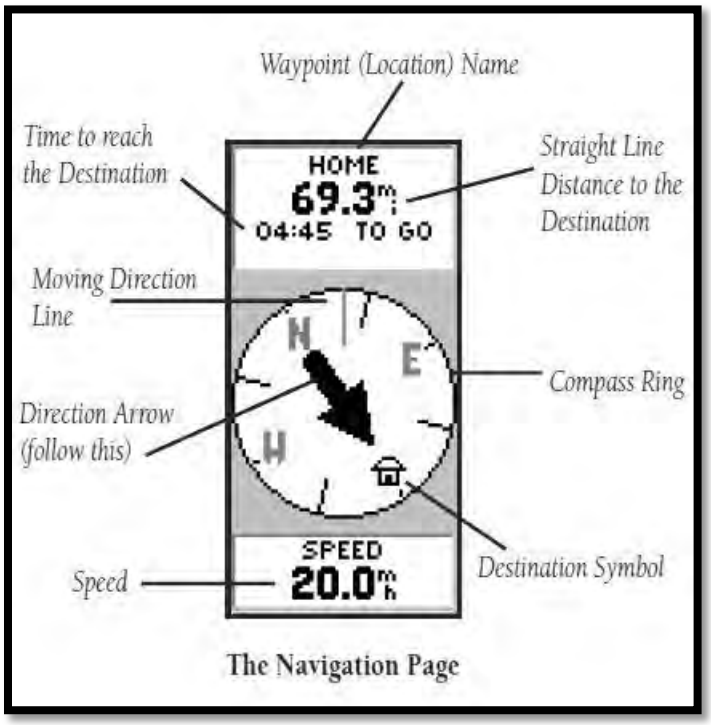


Figure A-9 Navigation Page

j. By pressing the **UP** or **DOWN** buttons, you can cycle through other trip computer information such as average speed, maximum speed, moving direction, bearing, position coordinates **(military grid coordinates)**, elevation, time of sunrise/sunset, trip timer and trip odometer.

k. The Main Menu gives you access to the eTrex's more advance features. With the main menu, you can create and view waypoints, create a route, save a view tracking logs or access **SYSTEM SETUP** features.

l. You must set up your eTrex before you can navigate. Go to the Setup Menu. You can change the time format (12 or 24 hour), North reference, operating mode, display brightness and how long the display back light stays on.

k. First, Set the **TIME FORMAT** to 24 hour time. For Afghanistan, enter the **TIME ZONE** to **OTHER.** The **UTC OFFSET** is **+04:30.**

Figure A-01 Time Format, Time Zone screen

l. Next, set the **UNITS** of measure. The **POSITION FRMT** should be **MGRS.** The **MAP DATUM** should be **WGS 84.** The **UNITS** should be set to **METERS.** Then **NORTH REF** should be set to **GRID.**

m. Scroll to the **INTERFACE** page. Set the **I/O FORMAT** to **GARMIN.**

Figure A-00 Interface Page

n. Scroll to the **SYSTEM** page and set the **MODE** to **NORMAL** or **BATTERY SAVE**.

Figure A-01 System Page **NORMAL** mode

Figure A-01 System Page **BATTERY SAVE** mode

o. Troubleshooting tips are listed below-

1. If the eTrex does not turn on, check to see if the batteries are installed correctly and that the ends of the batteries are clean.

2. If it takes more than 10 minutes to get a location fix, check to see if there are large obstacles overhead and move to a location with a clear view of the sky.

3. If the arrow on the navigation page does not point to the destination, you need to start moving. The eTrex will not update information if you are standing still.

4. If you cannot see the screen at night, adjust the contrast.

Appendix B- The DeLorme PN-60 Global Positioning System

a. The DeLorma PN-60 is very similar to the Garmin eTrex global positioning system.

b. To select an item on the screen, use the arrow keypad to move/scroll to the item to highlight it and press **ENTER** (Figure B-2). To edit letters and numbers, use the on-screen keyboard. To edit numbers, use the up/down arrows on the arrow keypad to increase or decrease number and change other information. Use the left and right arrows to move the selection. To enter a selected check box, highlight it and press **ENTER.** When you make a selection or finish editing information, press **ENTER** to complete the action. To exit a page or screen, press **QUIT**.

Figure B-1 DeLorme PN-60 Global Positioning System

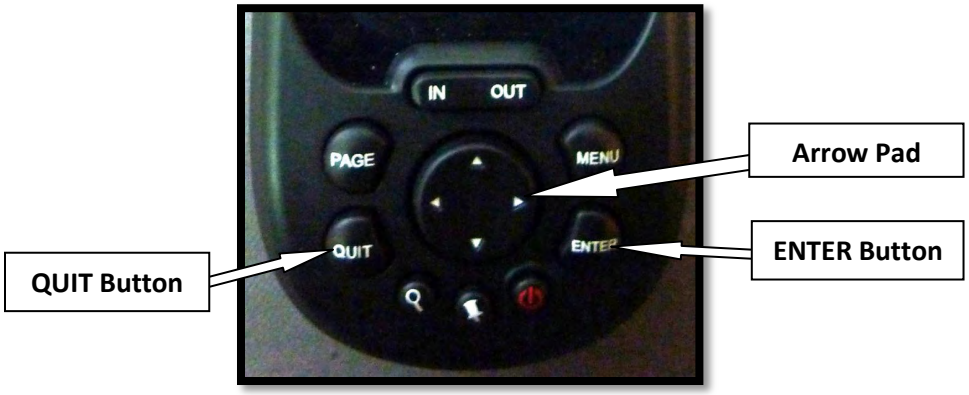


Figure B-2 Arrow Pad and Buttons

c. The PN-60 uses two AA batteries. The battery indicator is on the top left on the home page screen. You should remove the batteries when storing the PN-60 for a month or longer. There is and SD card slot under the batteries inside the battery compartment. SD/SDHC/MMC cards up to 32GB are supported.

d. To install the batteries and the SD card, unscrew the rings on the back of the device until you can remove the battery cover. If you need to insert an SD card, gently press down the SD card latch, insert the SD card in the slot and close the latch (Figure B-3). Insert the batteries as shown in figure B-4. Ensure that you got to **SETTNGS > SYSTEM > BATTERY TYPE** and make sure you set it on Alkaline (Figure B-5)

Figure B-3 Inserting SD Card

Figure B-4 Inserting Two AA Batteries

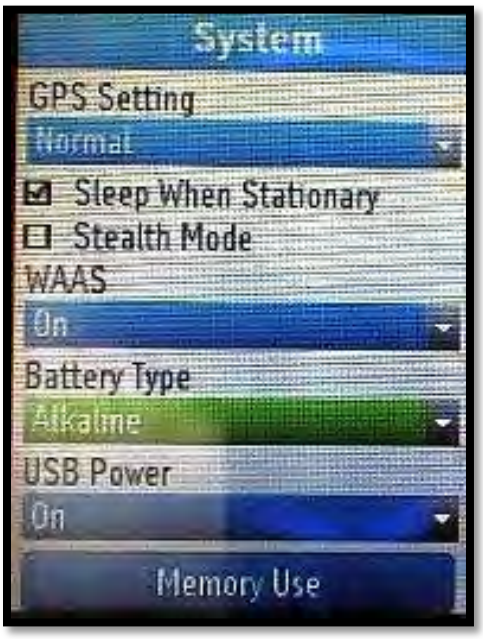


Figure B-5 Battery Type (Alkaline)

e. Use the **POWER** button to turn the PN-60 on and off, lock the buttons, or to change the backlight settings (Figure B-6). To turn the device on, press and hold the **POWER** button until the welcome screen appears. To turn the device off, press the **POWER** button until the **"Shutting down the device"** message displays. If you quickly press and release the **POWER** button, you can adjust the backlight brightness by using the arrow pad to adjust the backlight slider. If you want to lock the buttons, select **Yes** when you see the **Lock the buttons?** message. To unlock the buttons, press and release the power button and select **Yes** when you see the **Unlock the buttons?** message.f. Use the IN/OUT button to zoom the map or to track profile in or out or scroll through a list.

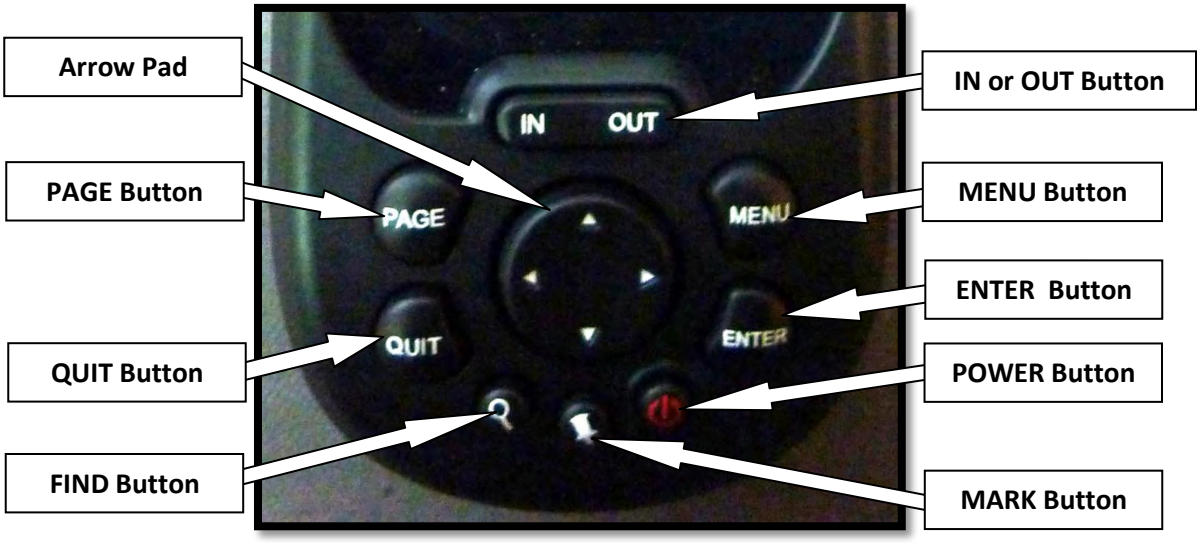


Figure B-6 Using the Buttons

g. Press the **PAGE** button to move forward through the pages in the page order sequence. To add, remove, or reorder the pages, go to **Settings > Page Order.**

h. Press the **MENU** button to access functions for the page or screen you are using. From any page, press the **MENU** button twice to go to the home page. Use the **MENU** button on any active page, select the item and press **ENTER**.

i.The **MARK** button is used to mark a waypoint or your current GPS location. It can be used to mark a location when panning on a map page with the cursor.

j. The **Arrow Keypad** is used to move around pages and screens Press up, down, left or right to move to another location or to scroll through a menu.

k The **ENTER** button is used to complete a selection and to save it.

l. The function of the **QUIT** button depends on the status of the PN-60, some the things you can do are:

-Exit a page or screen.

-Cancel actions.

-Close the keyboard and cancel changes.

-Delete individual points when measuring distance.

-Move backwards through the page order sequence.

m. The **Home Page** uses icons to give you a quick way to locate the page on the device you want to view. Use the **arrow keypad** to select an icon and then press **ENTER** to open that page. The **Home Page** also displays the GPS status and accuracy, the battery power indicator, time and date. To quickly get to the **Home Page** from any page on the PN-60, press **MENU** twice. To switch pages, press the right or left arrow until the page view changes.

Figure B-7 The Home Page

o. The **Satellites Page** displays GPS and satellite information, time and elevation. The display shows the satellite numbers, position and the signal strength of each satellite signal (Figure B-8).

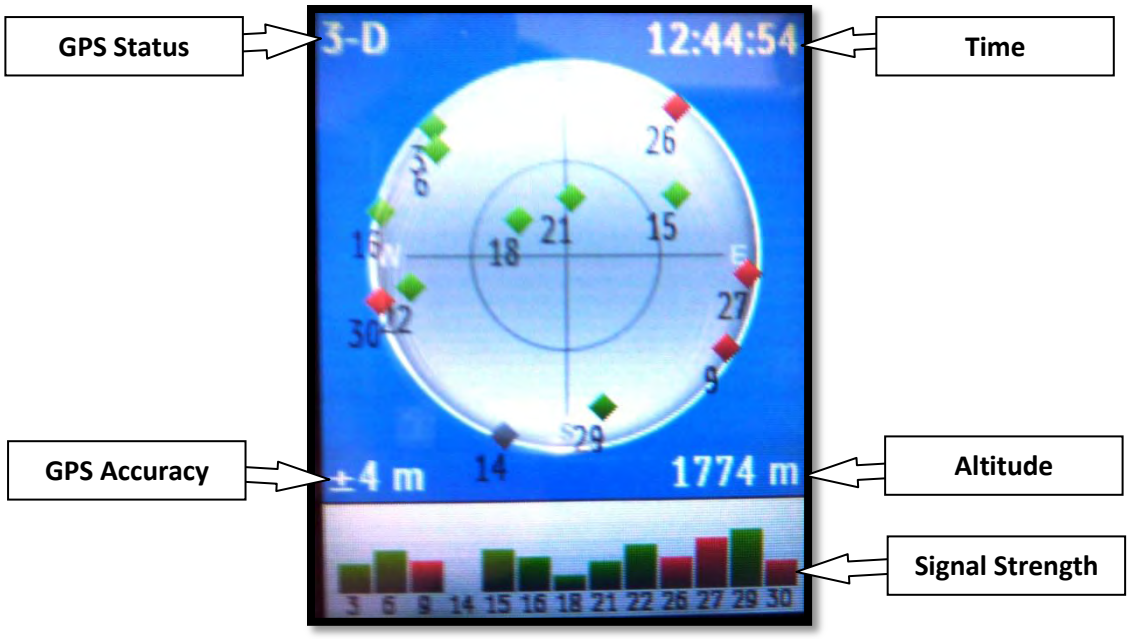


Figure B-8 The Satellites Page

p. The accuracy of the GPS is displayed in the lower left corner of the **Satellites Page**. On the **Map Page,** GPS accuracy is represented by a circle with a radius equal to the GPS accuracy; your actual location on the map is within the circle. Any buildings, natural structures, or heavy vegetation that obstruct the GPS antenna's view of the sky may prevent satellite signals from reaching the reciever and will decrease the accuracy of your position. Placing the PN-60 in your pocket or backpack should not affect the positional accuracy.

q. The **Map Page** centers the map on your current location when the PN-60 has a 2-D or 3-D fix. When it does not have a GPS fix, the map displays your last GPS position, or the map cursor postion (Figure B-9). The GPS arrow displays on the map when GPS is turned on. The color of the arrow depends on your GPS signal and the arrow point in the direction of the last known heading. When tracking satellites, a track line (or bread crumb trail) follows the GPS arrow as you move. If you have turned off track recording, the track does not appear.

1. Flashing Red Arrow- The device cannot obtain a GPS signal and is not tracking sattelites.
2. Blue Arrow- The device is in Track Playback mode or Simulate Navigation Mode.
3. Yello Arrow- The device has a 2-D fix.
4. Green Arrow- The device has a 3-D fix.

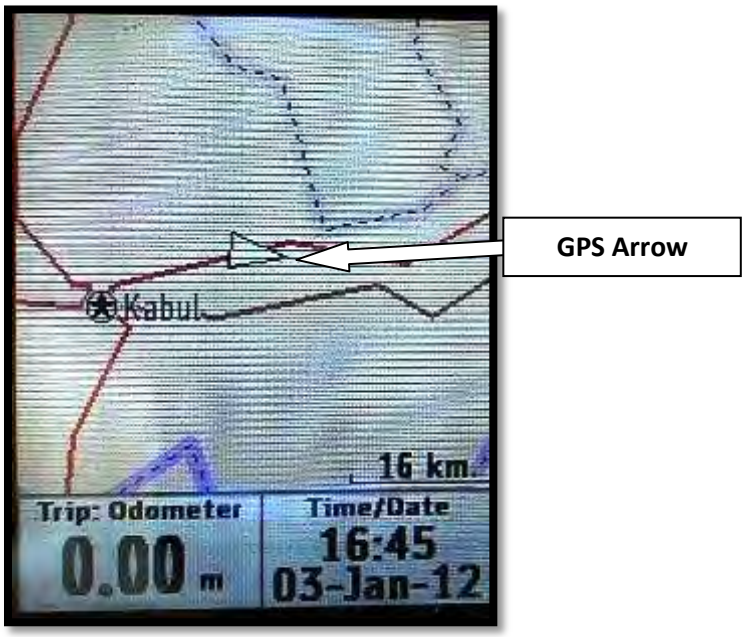


Figure B-9 The Map Page

r. The **Compass Page** helps you to find your destination. As you move, the compass rotates so that the heading is always up. When you are navigating a route, the green bearing arrow displays on the compass to show you the direction you should be going (Figure B-10).

Figure B-10 The Compass Page

s. The first thing you need to do is to set up your PN-60 GPS. Here is a step by step process to set the PN-60 up before use.

1. Using the **Arrow Pad,** scroll over the **Settings** icon on the **Home Page** and press the **ENTER** button (Figure B-11). This will bring you to the **Settings Page** (Figure B-12).

Figure B-11 Settings Icon on the Home Page

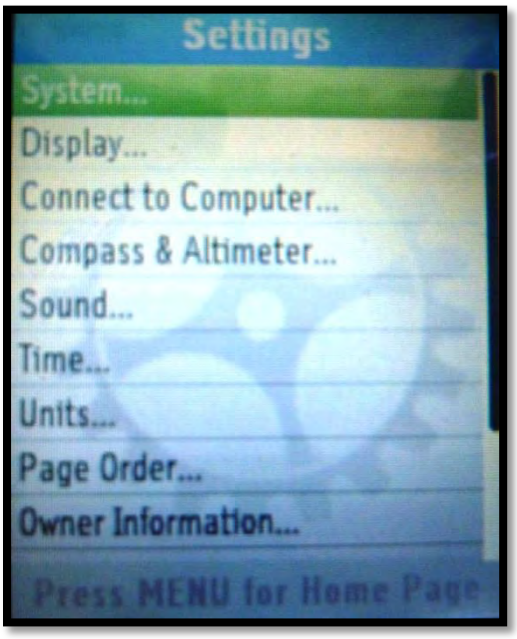


Figure B-12 Settings Page

2. On the **System** block, press the **ENTER** button and it will take you to the **System** page. Scroll down the menu and ensure you select **Alkaline** as the battery type (Figure B-13).

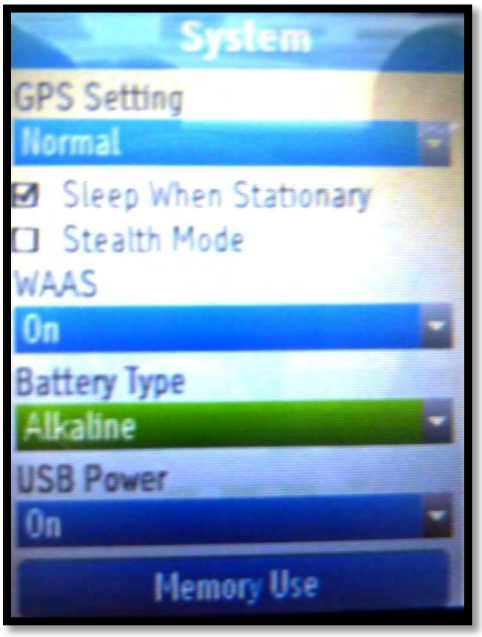


Figure B-13 System Page

3. Press **QUIT** and this will take you back to the **Settings** page. Scroll down to **Display** using the arrow pad. Press **ENTER** and you will se the **Display** page (Figure B-14). Use the arrow pad to scroll down to the **Backlight Intensity** slider and adjust it to the desired brightness. You can scroll down to the **Backlight Timer** and change the setting on how long the backlight stays on.

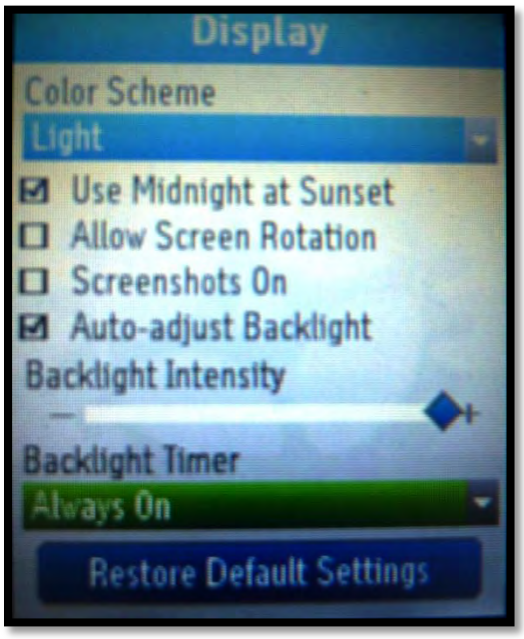


Figure B-14 Display Page

4. Press **QUIT** and this will bring you back to the **Settings** page. Scroll down to the **Time** block and press **ENTER.** Ensure the GPS is set for **Local 24 hr** time (Figure B-15).

Figure B-15 Time Settings

5. Press **QUIT** to go back to the **Settings** page. Go to Units and press **ENTER**. This will take you to the **Units** page. Ensure the primary coordinates are set to **USNG/MGRS**. The primary datum should be **WGS84**. Set the secondary coordinates to **USNG/MGRS**. Set the secondary datum to **WGS84**. Ensure the measures are set to **Kilometers** (Figure B-16).

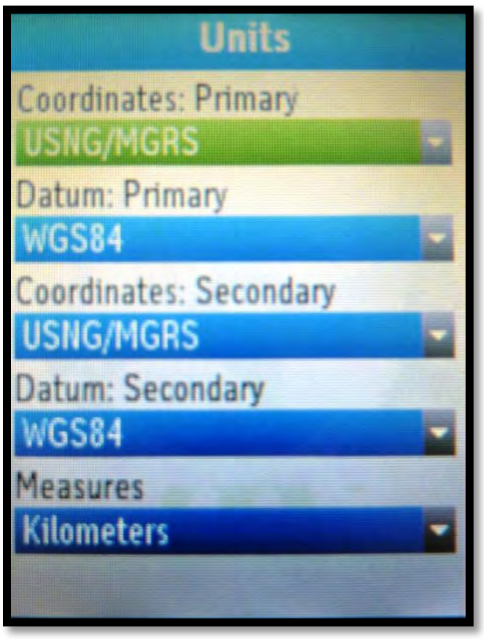


Figure B-16 Units Settings

Appendix C- Symphony Electronic Counter Measures (Jammer)

a. Symphony is a vehicle mounted CREW system designed to defeat some Radio Controlled Improvised Explosive Devices (RCIEDs).

b. The Symphony consists of:

- Vehicle-Based System (VBS)
- Remote Control Unit (RCU)
- RF Cables
- Power cables
- Antennas
- Fill Loader Gun
- Field Test Set

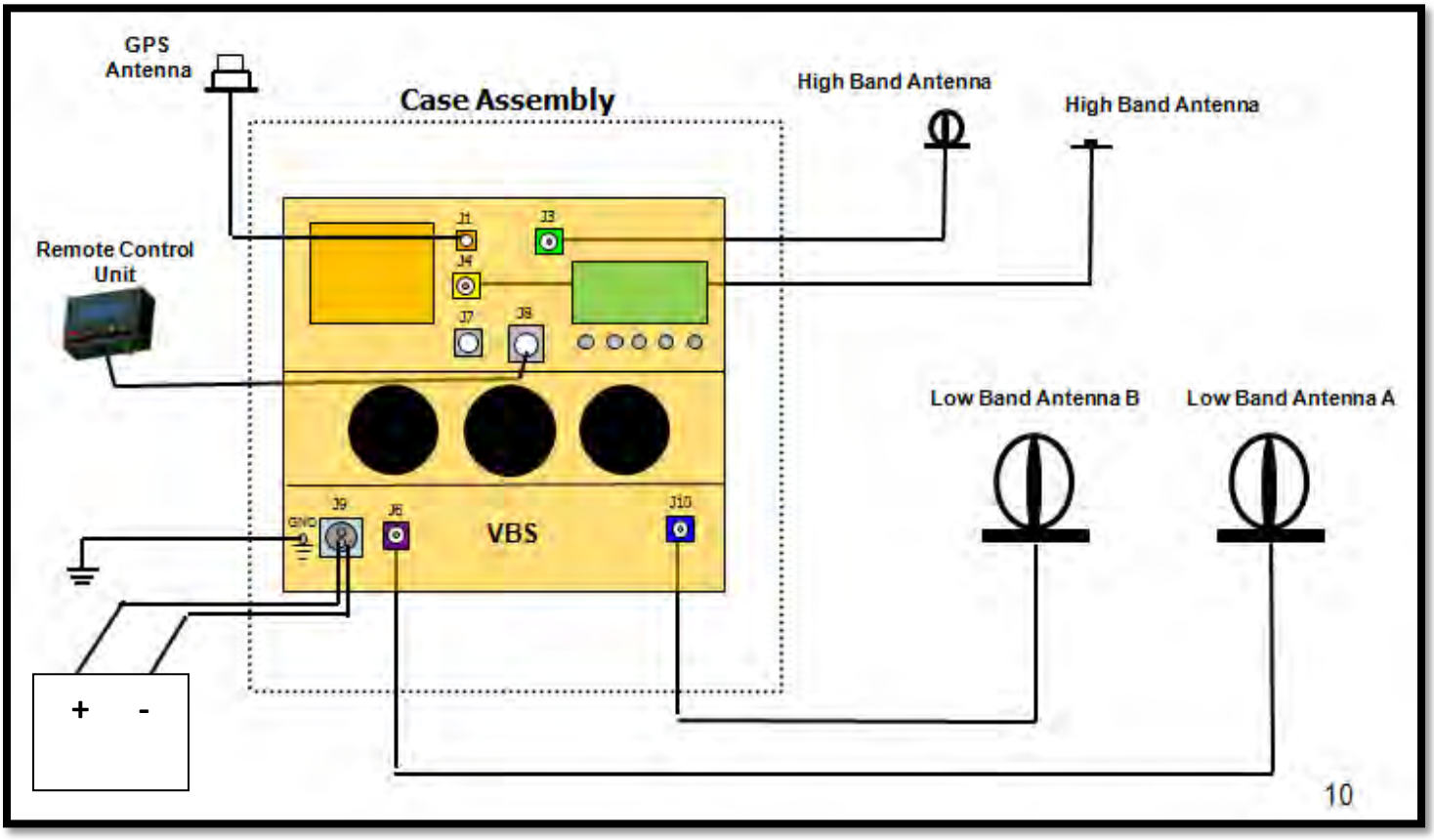


Figure C-1 Symphony Jammer (ECM)

c. The vehicle based system has four modes.

1. Sleep mode
2. Standby mode
3. Active mode
4. Diagnostics mode

Figure C-2 Symphony Vehicle Based System

d. The display screen on the vehicle based unit and the remote control unit are the same. When the remote control is connected, the screen on the vehicle based unit is blank and the five buttons are inoperative. The Symphony is then controlled by the remote control unit, which is mounted near the truck commander.

e. The five buttons on the vehicle based unit and the remote control are identical. They are OFF, STANDBY, ACTIVE, RUN and FILL (Figure C-3).

Figure C-3 Remote Control Unit

f. The Fill Loader Gun (Figure C-4)-

1. Receives Fill Project from computer via USB cable.
2. Connects to front panel J7 of system via cable.
3. Holds Fill Project to be transferred to systems.
4. Eliminates need to attach each system directly to computer.

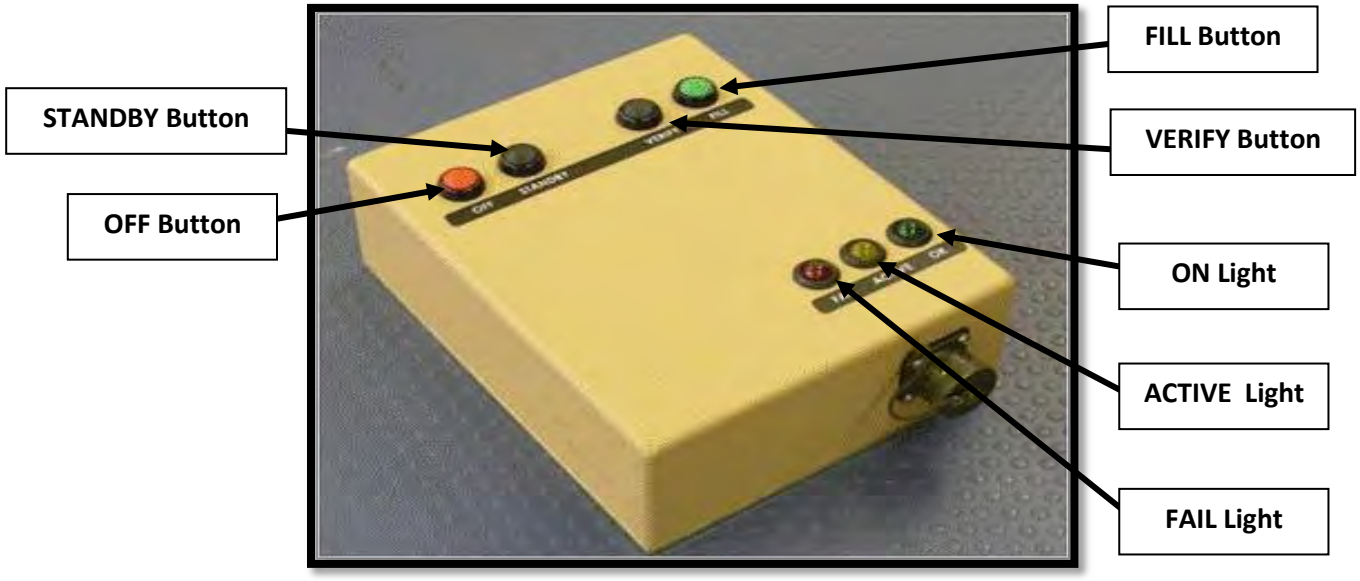


Figure C-4 Fill Loader Gun

g. The Field Test Set (Figure C-4)-

1. Checks for RF transmissions in four bands.

2. Can be used to verify that system is functioning properly.

h. To use the Field Test Set-

1. Hold down yellow button. Two middle bands will light up (If red, replace batteries).

2. Initialize Sequence- All 4 bands will be green and then fall slowly to yellow to red.

3. Once the Initialize sequence is complete, the display will show the power levels it detects in each band. If system is active, all bands will display green.

4. To turn the test set off, release the yellow button.

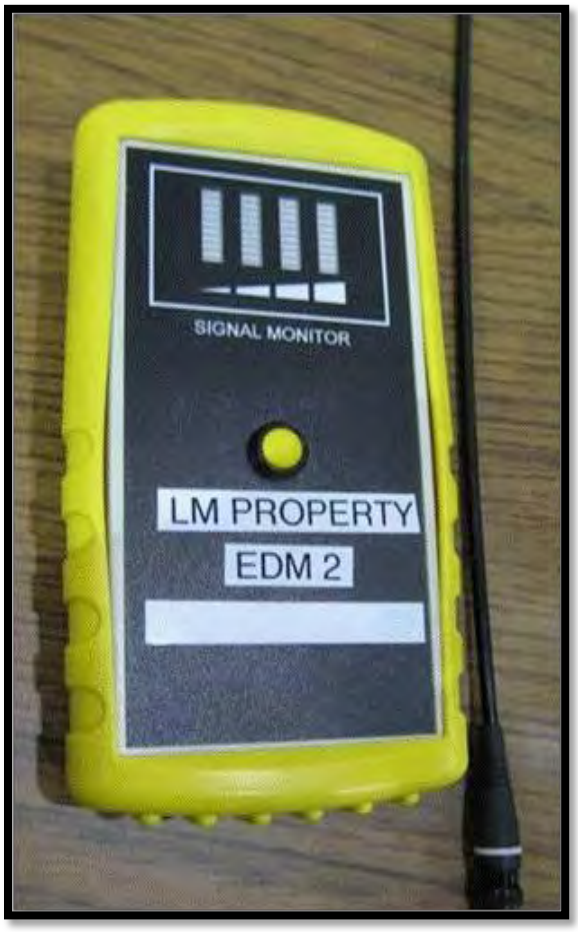


Figure C-5 Field Test Set

i. The remote control unit has the same buttons as the vehicle based unit. When it is connected, the LED screen on the vehicle based unit is inoperative, and the system is controlled by the remote control by the vehicle commander. The remote control is mounted in the right front of the HMMWV to the immediate left of the vehicle commander.

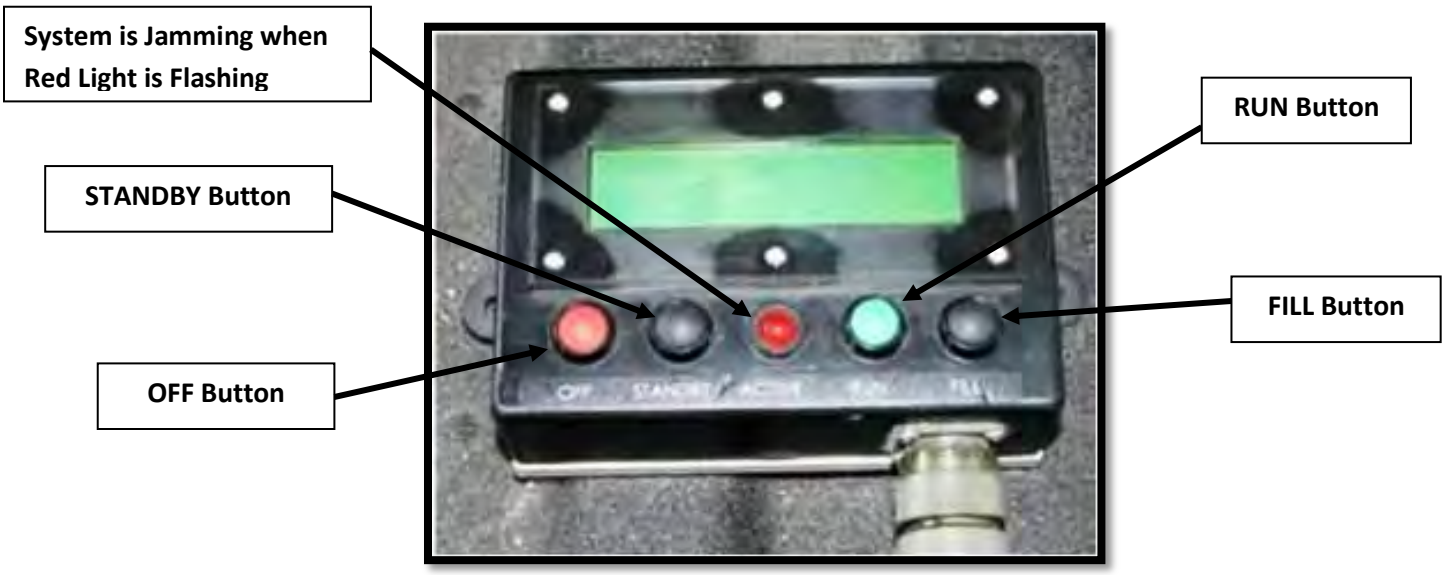


Figure C-6 Remote Control Unit

j. The Symphony system has four modes of operation-

1. Sleep mode.
2. Standby mode.
3. Active mode.
4. Diagnostics mode.

k. To enter diagnostics mode, hold the STANDBY button down while the system is already in a standby mode. To exit the diagnostics mode, press the STANDBY button again. This is normally used by the field serviced representative for troubleshooting the system.

l. If BAD FILL DATA is displayed, the unit has been disconnected from a power source. A new fill project must be loaded with the fill loader gun before the system can go into the active mode.

Figure C-7 Bad Fill Data

m. If BAD CHANNEL A or BAD CHANNEL B is displayed on the LED, the system must be repaired by a field service representative.

n. To put the Symphony system into operation-

1. Press the black STANDBY button for three seconds. A beep sound will be emitted as the unit is turned on.

2. The first message that will be displayed is SYMPHONY RUNNING TESTS.

3. Before proceeding, the name of a fill project should appear on the top of the display, and the message SYSTEM OK should appear on the bottom of the screen.

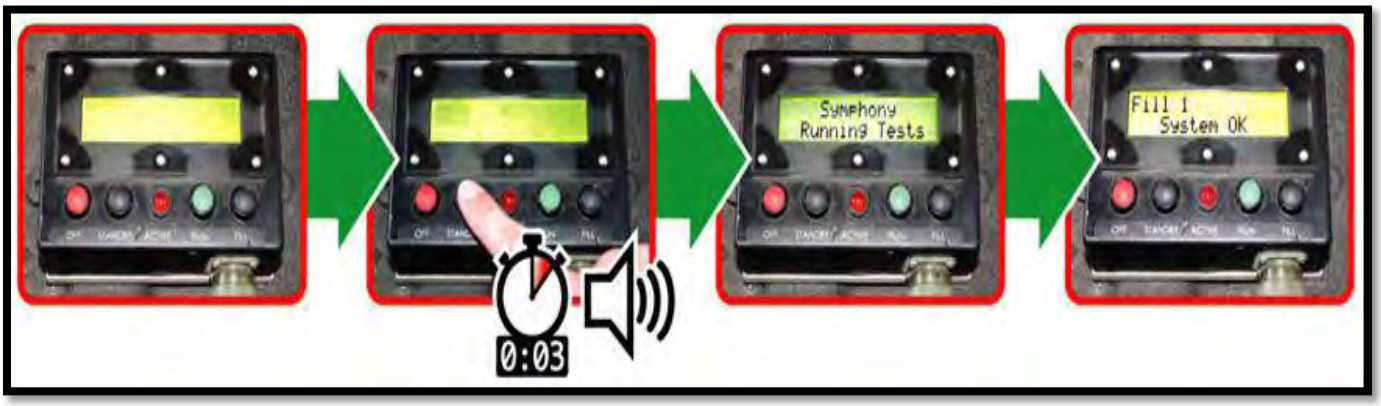


Figure C-8 Putting the Symphony into Operation

o. To stop jamming and to put the system into a standby mode, push the black STANDBY button for three seconds and the red flashing ACTIVE light will shut off.

Figure C-9 Placing the Symphony in STANDBY mode

p. To select a fill file and go into the active mode (from the standby mode), press the red FILL button. Each time the red FILL button is pressed, the unit will advance to the next file that has been loaded. There are a total of four fill files to select from.

Figure C-01 Selecting a Fill File from the Standby Mode

q. After a fill file has been selected, press the green RUN button for three seconds. The red ACTIVE light will flash for two seconds and then will emit a solid red light. This indicates the Symphony is in an active jamming mode.

Figure C-00 Placing the Symphony in an Active Jamming Mode

r. To zeroize the system (remove the fill load), press the red OFF button and the FILL button together for three seconds. The threat load will be erased and the unit will enter a sleep mode.

Figure C-01 Erasing a Fill Load

s. To turn the unit off, push the red OFF button for three seconds. Turning the unit off does not erase the fill load. Disconnecting the power supply or turning the red rotary switch to off will also erase the fill load.

t. Basic maintenance and troubleshooting procedures are as follows-

1. Ensure that there is power to the unit. Check the circuit breaker under the right front seat of the HMMWV (in or near the battery box) to ensure it is closed.

2, If BAD GPS AERIAL is displayed on the LCD screen, check to ensure there is a good cable connection at J1. If the vehicle is inside, or something is blocking the signal to the GPS puck on the outside of the vehicle, move the vehicle to a location where is no interference between satellites and the

GPS puck. if GPS REFERENCE LOST is displayed, the system will run with this error message, but may lose accuracy over time.

3. Ensure that the three air fan vents in front of the vehicle based unit are not blocked with gear or equipment. If they are blocked, the unit will overheat and fail.

4. The unit is water resistant, so you can use a hose and water to wash off the vehicle based unit without damaging it. Do not use a high pressure washer.

5. Do not operate with the front or back cover on the vehicle based unit. This will overheat and damage the unit.

6. If the LED display on the vehicle based unit is not working, check to ensure the remote control unit is not attached. If the remote control unit is attached to the J8 plug on the vehicle based unit, the unit can only be controlled from inside the vehicle.

7. If BAD FILL T/OUT is displayed, the fill load has expired. The expiration month and year are displayed on the screen. Contact your field service representative to load a current fill into your fill loader gun.

8. If BAD CHANNEL A or BAD CHANNEL B are displayed, return the unit to sleep mode for one minute and then reenter standby mode. If the error is still present, shut off the power to the unit (use the circuit breaker near the batter box) for one minute, then reenter the standby mode. If the error is persistent, contact your field service representative.

Appendix D- Counter IED Hand and Arm Signals

a. When a soldier has spotted an IED indicator, he needs to be able to quickly relay the information to the rest of the route clearance patrol. If he does not have a radio, the best way is to use hand and arm signals. These hand and arm signals were developed exclusively for ANA route clearance soldiers.

IED- Cup Your Hand, Palm Facing Up

LANDMINE- Cup Your Hand, Palm Facing Down

PRESSURE PLATE- At Chest Level, Press Your Palms Together

COMMAND WIRE- At Chest Level, Drag One Hand Across Your Body With Your Index Finger Extended

REMOTE CONTROLLED IED- Use The Signal For An IED And, Above That Hand, Open And Close Your Opposite Hand

CULVERT- Cup Your Hands, Palms Facing Down, And Drag Across Your Body

DISTURBED EARTH- At Chest Level, Lay Your Hand Flat, Palm Facing Down, And Wiggle Your Fingers

EXPOSED WIRE- 1) Lay One Hand Flat And Parallel To The Ground, Palm Facing Down.
2) Push The Opposite Hand's Index Finger Up Between Fingers Of The First Hand

BOOBY TRAP- With Open Palms, Pat Your Chest

TRIP WIRE- With An Open Palm, Drag Your Hand Across Your Ankle In A Slicing Motion

UXO- With A Closed Fist, Extend Your Thumb And Face Your Palm To The Ground

CACHE- Signal A UXO With One Hand And Cover It On Top With A Flat Hand; Palm Down, Fingers Closed

POWER SOURCE- With Index Fingers Extended On Both Hands, Bring Hands Together With One Finger Pointing Up And One Pointing Down (Denoting A Positive And Negative Charge)

. **DAISY CHAIN-** At Chest Level, Interlock Index Fingers And Pull In Opposite Directions Across Your Body (This Can Be Enhanced By Pointing In The Direction The Daisy Chain Runs And Signaling The Number Of Charges Observed)

MINE DETECTOR HIT- Upon Receiving A Detection Signal From A Mine Detector, Stop Movement, And Raise Your Free Hand

ESTABLISH CORDON- 1) With Two Fingers, Point Towards, Then Away From Your Eyes, Signaling A Security Posture. 2) With Flat Palms Facing Outward, Push Sideways, Away From Your Body, Signaling For Dismounts To Move Out Into A Wide Cordon

Appendix E- NATO 10 Line EID/UXO Report

NATO TEN LINE IED/UXO REPORT

LINE 1 DATE-TIME GROUP OF REPORT

LINE 2 REPORTING UNIT

LINE 3 TYPE OF ORDNANCE/IED

LINE 4 LOCATION OF UXO/IED

LINE 5 GRID COORDINATE OF LINK-UP OF EOD

LINE 6 CONTACT METHOD (RADIO, PHONE, ETC)

LINE 7 TACTICAL SITUATION

LINE 8 DAMAGE TO INFRASTRUCTURE

LINE 9 PROTECTIVE MEASURES TAKEN

LINE 10 RECOMMENDED PRIORITY (HIGH, MEDIUM, LOW, NO THREAT)

Appendix F- Counter IED Terms (English, Dari and Pashtu)

English Term	Dari	Pashtu
10-Line IED/UXO Report	راپور 10 خطی ماین های تعبیه شده/ مهمات منفلق نشده	تعبیه شوی ماینونه/ ناچاودیدونکی توکی ۱۰ خطی راپور
Aiming Point	نقطه هدف گیری	د هدف نیونی ځای
Ant Trails	ردپای مورچه	د میږی د پښو ځای
Anti Lift Device	آله ضد برداشت	د پورته کولو ضد آله
Antipersonnel	ضد پرسونل	پرسونل ضد
Approach Path	مسیر تقرب	د نږدی کیدلو مسیر
Armed	مسلح/ آماده	مسلح (تیار)
Arming	آماده سازی فعال سازی	مسلح (تیار)
Binoculars	دوربین	دوربین
Blast effect	تاثیر انفجار	د انفجار تاثیر
Blast Hole	سوراخ انفجار	د انفجار سوری
Blasting Cap / Detonator	پتاقی، کپسول انفجاری	پتاقی
Blasting Cap, Electric	کپسول انفجاری برقی	برقی، انفجاری کپسول
Blasting Cap, High Strength	کپسول انفجاری، قدرت بالا .	قوی، انفجاری کپسول
Blasting Cap, Low Strength	کپسول انفجاری، قدرت پایین	ټیټ، انفجاری کپسول
Blasting Cap, Non-Electric	کپسول انفجاری، غیر برقی	غیربرقی، انفجاری کپسول
Blasting Galvanometer	برق سنج آله انفجار	د چاودیدونکو توکو برښنا سنجونکی آله
Blasting machine (Exploder)	ماشین انفجار (اکسپلودر)	د انفجار ماشین (اکسپلودر)
Bomb Suit	بمب سوت، لباس زره ای	بمب سوت، زغری کالی
Booby Trap	تله کشی شیطانی	شیطانی تلکونه
Booster	تقویت کننده	پر مخ وړونکی
Branch Line	لین فرعی	فرعی یا څانګه لین
Bridge	پل	پله
Bridle	تسمه	تسمه
Case	پوش	پوښ
Charge	چارج	چارج
Choke Point	محل کنترولی	کنترولی محل
Circuit	سرکت	سرکت
Command Armed/Arming	آماده شونده قومانده ای/آماده سازی	د قوماندی سره چمتو کیږی/چمتو کیدنه
Command Wire	لین هدایت شونده	هدایت شوی لین
Command Wire IED	ماین تعبیه شده هدایت شونده لین دار	تعبیه شوی لین دار ماین
Container	بسته های قطعی حاوی مواد	د موادو ډبی
Continuity	اطمینان تسلسل اتصال	نه پریکیدونه /تسلسل
Cordon	کمربند امنیتی یا احاطه	امنیتی کمربند
Counter Charge	چارج تخریب	له منځه وړونکی چارج
Crimp	کریمپ کردن پایه چ لا کردن	کریمپ کول پایه چ جوړول
Culvert	پلچک	وړه پله
Daisy Chained	ماین های وصل شده متعدد	متعدد یا څو دانه نښلول شوی ماینونه
Danger Areas	ساحات خطر	خطر لرونکی ساحه

English Term	Dari	Pashtu
Defuse	خنثی ساختن	خنثی کول
Demolition	تخریب	تخریب له منځه وړنه
Demolition Charge	چارج تخریب	له منځه وړونکی چارج
Detonating cord	فتیله انفلاقیه	انفلاقی فلیته
Detonation	انفجار	انفلاق
Directional Fragmentation Charge	باروت تولید چره های پارچه به یک جهت	هغه چارج چې واړه ټوټې په یوی بڼ واته اچوی
Disarm	غیر فعال ساختن	له کار اچونه
Disturbed Earth	زمین غیر عادی یا دستکاری شده	غیر عادی یا لاس وهل شوی ځمکه
Double Overhand Knot	گره دوقات با دست	د لاس سره دوقاته ګره
Electrical Firing System	سیستم انداخت برقی	برقی انفجار سیستم
Electro Magnetic Radiation	تشعشع امواج برقی مقناطیسی	د برقی مقناطیسی څپو ځلېدنه
Electronic Counter Measures	ضد ارسال الکترونیکی	د الکترونیکی لېږلو ضد دستګاه
Explosion	انفجار	انفجار
Explosive Ordnance Disposal	تخریب مهمات منفلق نشده	د چاودېدونکو موادو د له منځه وړنه
Explosives	مواد انفجاری	چاودېدونکی مواد
Find	یافتن	موندل
Fire	آتش، انداخت	اور فیر
Firing Circuit	سرکټ/ دوره آتش	د اور سرکټ / دوره
Fragmentation	چره ی پارچه	چره ی پارچه
Fuse	فیوز	فیوز
Fuse Igniter	فیوز اشتعال	د انفجار فیوز
Ground / Earth	دور ساختن برق سرکټ / آرت کردن	د بدن د ولاړ برق لرې کول / آرت کول
High Explosive	مواد منفلقه قوی	قوی چاودېدونکی مواد
Hoax	جعلی یا فریبی	جعلی یا فریب ورکول
Home Made Explosives	مواد انفجاری خودسازی شده	جوړ کړل شوی چاودېدونکی توکی
Hot Stick	چوب طویل	اوږد لرګی
IED Mitigation Technician	متخصص کاهش ماین	د ماین لږون متخصص
Improvised Claymore	ماین دو جانبه خودسازی شده	دوه مخ لرونکی ځای پرځای شوی ماین
Improvised Explosive Device	آله انفجاری تعبیه شده (ماین تعبیه شده)	تعبیه شوی ماین
Improvised rocket launcher	راکت انداز تعبیه شده	تعبیه شوی راکت انداز
Inert	خنثی / فاقد ماده منفلقه	د چاودېدونکو موادو نه لرونکی / خنثی
Initiator	محرک برق سازی یا آغاز گر انفجار	پیلونکی یا چاودنه ورکونکی
Insulation	عایق کاری	عایق کاری
Interrogate	تحریک ساختن	تحریک کول
Interrogation Charge	باروت تحریک کن	د تحریک کولو باروت
Limitations	محدودیت ها	محدودیتونه
Line of Sight	ساحه دید	د لید ساحه
Main Charge	مواد اصلی انفجاری	اصلی چاودېدونکی توکی
Main Line	لین اساسی	مرکزی لین

English Term	Dari	Pashtu
Military Ordnance	مهمات انفجاری نظامی	نظامی چاودیدونکی توکی
Mine	ماین	ماین
Mine / Metal Detector	آله کشف فلز/ماین	فلزیابی کشف آله/ ماین
Mine Clearance	پاکسازی ماین	ماین پاکی
Minimum Safe Distance	حداقل فاصله مصئونیت امن	لږ ترلږه امنیتی واټن
Misfire	قطع آتش	مرفیلر
Mitigation	کاهش دادن تخفیف دادن	لږول، کاهش ورکول
Modernized Demolition Initiators	سیستم آغازگر مدرن انفجاری	د انفجار ورکوونکو مدرن سیستم
Neutralize	خنثی سازی	خنثی کول
Non-Electric Firing System	سیستم انفجار غیربرقی	غیربرقی انفجاری سیستم
Plastic Explosive	مواد انفلاقی پلاستیکی	چاودیدونکی پلاستیکی مواد
Post Blast Confirmation	تایید پس از انفجار	له انفجار څخه وروسته تایید کول
Power Source	منبع برق	د برښنا منبع
Pressure Plate	پلیت فشاری	فشاری پلیټ
Pressure Release	دور ساز فشاری	فشار لرې کول
Prime Explosive	بسته بندی مواد انفجاری	د چاودیدونکی توکی بسته کول
Primer	حق شتعال	اور اچوونکی
Probe	کاوش یا تفحص کردن	پلټونه له یوشی سره
Projectile	مرمیاتی اسن گلوله	مرمی
Radio Controlled IED	ماین تعبیه شده کنترول توسط مخابره	تعبیه شوی کنترولی ماین له مخابری سره
Reconnaissance	کشف یا کشفی	کشف یا کشفی
Render Safe Procedure	مصئون سازی یا طریقه بی خطرسازی	د بی خطری کولو کړنلاری (آر ایس پی)
Robot	روبات	روبات
Robot Video	تصویر روبات	د روبات تصویر
Search	جستجو کردن تلاشی	پلټنه
Shock Tube	شاک تیوب	شاک تیوب
Shrapnel	چره های جابجا شده در مواد انفجاری	واړه ټوټې چې په چاودیدونکي توکي ځای پر ځای دي
Spotting Scope	محل تعیین دقیق	د دقیق تعینولو محل
Static Electricity	برق ساکن	ساکن برق
Suicide IED	ماین تعبیه شده انتحاری	انتحاری تعبیه شوی ماین
Suicide Vest	واسکت انتحاری	انتحاری واسکټ
Suicide Vehicle Borne IED	واسطه تعبیه شده انتحاری	تعبیه شوی انتحاری موټر
Tension Release	رها کننده فشار	فشار لرې کونه
Test Set	تست کننده لین	د لین تستکول
Time Delay	تاخیر زمانی	د وخت ځنډول
Time Delay	به تعویق انداختن وقت	زمانی ځنډیدونکی
Time Fuse / Safety fuse	فلیته ثانیه سوز فلیته مصئونیت	ثانیه سوز فلیته
Time on Target	زمان بالای هدف	پر هدف باندی وخت
Trigger	ماشه	ماشه

English Term	Dari	Pashtu
Trigger man	مرد شلیک کننده	شلیک کوونکی سړی
Trigger, Multiple	ماشه، متعدد یا ماشه چکانه	متعدد یا څو دانه ماشه
Trip Wire	لین دوانی شده	لین اچونه
Unarmed	غیر عیار	غیر عیار
Unexploded Ordnance	مهمات منفلق ناشده	ناچاودلی مهمات
Vehicle Borne IED	واسطه با مین تعبیه شده	موټر لرونکی تعبیه شوی مین
Victim Operated IED	مین فعال شونده توسط شخص	د قربانی سره فعال کیدونکی مین
Wire	سیم لین	سیم لین